Facility Information Summary	
AER Reporting Year	2015
Licence Register Number	W0041-01
Name of site	Enva Ireland Ltd
Site Location	Smithstown Industrial Estate, Shannon, Co. Clare
NACE Code	E38
Class/Classes of Activity	Class 6: Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this schedule. Class 7: Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule. Class 11: Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule. Class 12: Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule. Class 13: Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced. Licensed waste recovery activities, in accordance with the Fourth Schedule of the Waste Management Act, 1996 Class 2: Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes). Class 3: Recycling or reclamation of metals and metal compounds. Class 4: Recycling or reclamation of other inorganic materials. Class 8: Oil re-refining or other re-uses of oil.
National Grid Reference (6E, 6 N)	140778.83E, 163241.64N
A description of the activities/processes at the site for the reporting year. This should include information such as production increases or decreases on site, any infrastructural changes, environmental performance which was measured during	**Site Performance:** The company continues to demonstrate its commitment towards HSE management standards - the site maintains ISO14001 and OHSAS 18001. This ensures a standard approach is taking to managing activities from an environmental and safety aspect. There were no issues raised during the reporting period regarding maintenance to the standard. **Infrastructure / EMP progress:** In 2015 yard integrity improvement works have continued throughout the year, and focused primarily on the drum shredder yard area, further works focusing on bunding is planned for the coming year. All licence required testing continues to be carried out by accredited laboratories. A replacment of the drum washing unit was commenced in 2015. This unit is a direct replacement for the existing equipment. There are no changes to site emissions. **Environmental Performance:** There were no odour complaints for the reporting period, and all air monitoring was fully compliant. A non-conformance was notified to the Agency in October for an

the reporting year **and an overview of compliance with your licence** listing all exceedances of licence limits (where applicable) and what they relate to e.g. air, water, noise.	ELV breach for effluent to sewer for COD, this was an isolated incident due to an operative error. A drain survey was completed during the year and repair works were carried out as required. Bund integrity testing due in October were delayed due to wet weather conditions preventing accurate measurements for external bunds, these tests are now currently underway and scheduled for completion in Q 1 2016. Stock levels on site continue to be analysed and monitored closely. Approval is sought for any stock items on site greater than 6 months. Specialised projects are underway to eliminate those wastes which are proving more difficult to deal with.

Declaration:

All the data and information presented in this report has been checked and certified as being accurate. The quality of the information is assured to meet licence requirements.

Colette Horgan	31/03/2016
Signature Group/Facility manager (or nominated, suitably qualified and experienced deputy)	Date

AIR-summary template	Lic No:	W0041-01	Year	2015

Answer all questions and complete all tables where relevant

			Additional information
1	Does your site have licensed air emissions? If yes please complete table A1 and A2 below for the current reporting year and answer further questions. If **you do not have** licenced emissions and **do not complete a solvent management plan** (table A4 and A5) you do not need to complete the tables	Yes	

Periodic/Non-Continuous Monitoring

2	Are there any results in breach of licence requirements? If yes please provide brief details in the comment section of TableA1 below		No	
3	Was all monitoring carried out in accordance with EPA guidance note AG2 and using the basic air monitoring checklist?	Basic air monitoring checklist	Yes	

AGN2

Table A1: Licensed Mass Emissions/Ambient data-periodic monitoring (non-continuous)

Emission reference no:	Parameter/ Substance	Frequency of Monitoring	ELV in licence or any revision therof	Licence Compliance criteria	Measured value (max)	Unit of measurement	Compliant with licence limit	Method of analysis	Annual mass load (kg)	Comments - reason for change in % mass load from previous year if applicable
X2	Hydrogen Chloride	Monthly	10	100 % of values < ELV	0.013	mg/Nm3	yes	EN 1911-1 to 3:2003	0.02	
X2	Sulphur oxides (SOx/SO2)	Quaterly	300	100 % of values < ELV	10	mg/Nm3	yes	TGN 21	10.93	
X2	Nitrogen oxides (NOx/NO2)	Quaterly	300	100 % of values < ELV	0.99	mg/Nm3	yes	EN 14792:2005	0.74	
X2	Ammonia (NH3)	Monthly	30	100 % of values < ELV	0.01	mg/Nm3	yes	EN 14791:2005	0.02	
X2	Volumetric Flow	Monthly	4000	100 % of values < ELV	1232	Nm3/hour	yes	EN 13284 - 1:2002	9,056	
X2	Total Organic Carbon (as C)	Monthly	50	100 % of values < ELV	7.92	mg/Nm3	yes	EN 13649:2001	29.7	

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Continuous Monitoring

4	Does your site carry out continuous air emissions monitoring?	No	
	If yes please review your continuous monitoring data and report the required fields below in Table A2 and compare it to its relevant Emission Limit Value (ELV)		
5	Did continuous monitoring equipment experience downtime? If yes please record downtime in table A2 below	No	
6	Do you have a proactive service agreement for each piece of continuous monitoring equipment?	No	
7	Did your site experience any abatement system bypasses? If yes please detail them in table A3 below	SELECT	

Table A2: Summary of average emissions -continuous monitoring

Emission reference no:	Parameter/ Substance	ELV in licence or any revision therof	Averaging Period	Compliance Criteria	Units of measurement	Annual Emission	Annual maximum	Monitoring Equipment downtime (hours)	Number of ELV exceedences in current reporting year	Comments
	SELECT			SELECT	SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					
	SELECT				SELECT					

note 1: Volumetric flow shall be included as a reportable parameter.

Table A3: Abatement system bypass reporting table

Bypass protocol

Date*	Duration** (hours)	Location	Reason for bypass	Impact magnitude	Corrective action

* this should include all dates that an abatement system bypass occurred

** an accurate record of time bypass beginning and end should be logged on site and maintained for future Agency inspections please refer to bypass protocol link

AIR-summary template	Lic No:	W0041-01	Year	2015

Solvent use and management on site

8 Do you have a total Emission Limit Value of direct and fugitive emissions on site? if yes please fill out tables A4 and A5

SELECT	

Table A4: Solvent Management Plan Summary
Total VOC Emission limit value

Solvent regulations — Please refer to linked solvent regulations to complete table 5 and 6

Reporting year	Total solvent input on site (kg)	Total VOC emissions to Air from entire site (direct and fugitive)	Total VOC emissions as %of solvent input	Total Emission Limit Value (ELV) in licence or any revision therof	Compliance
					SELECT
					SELECT

Table A5: Solvent Mass Balance summary

	(I) Inputs (kg)	(O) Outputs (kg)						
Solvent	(I) Inputs (kg)	Organic solvent emission in waste	Solvents lost in water (kg)	Collected waste solvent (kg)	Fugitive Organic Solvent (kg)	Solvent released in other ways e.g. by-	Solvents destroyed onsite through	Total emission of Solvent to air (kg)
							Total	

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER) Lic No: W0041-01 Year 2015

			Additional information
1	Does your site have licensed emissions direct to surface water or direct to sewer? If yes please complete table W2 and W3 below for the current reporting year and answer further questions. If **you do not have** licenced emissions you only need to complete table W1 and or W2 for storm water analysis and visual inspections	Yes	
2	Was it a requirement of your licence to carry out visual inspections on any surface water discharges or watercourses on or near your site? If yes please complete table W2 below summarising only any evidence of contamination noted during visual inspections	No	

Table W1 Storm water monitoring

Location reference	Location relative to site activities	PRTR Parameter	Licenced Parameter	Monitoring date	ELV or trigger level in licence or any revision thereof*	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Comments
	SELECT	SELECT	SELECT			SELECT		SELECT	SELECT	
	SELECT	SELECT	SELECT			SELECT		SELECT	SELECT	

*trigger values may be agreed by the Agency outside of licence conditions

Table W2 Visual inspections-Please only enter details where contamination was observed.

Location Reference	Date of inspection	Description of contamination	Source of contamination	Corrective action	Comments
			SELECT		
			SELECT		

Licensed Emissions to water and /or wastewater(sewer)-periodic monitoring (non-continuous)

					Additional information
3	Was there any result in breach of licence requirements? If yes please provide brief details in the comment section of Table W3 below			Yes	
4	Was all monitoring carried out in accordance with EPA guidance and checklists for Quality of Aqueous Monitoring Data Reported to the EPA? If no please detail what areas require improvement in additional information box	External /Internal Lab Quality checklist	Assessment of results checklist	Yes	

Table W3: Licensed Emissions to water and /or wastewater (sewer)-periodic monitoring (non-continuous)

Emission reference no:	Emission released to	Parameter/ SubstanceNote 1	Type of sample	Frequency of monitoring	Averaging period	ELV or trigger values in licence or any revision thereof[Note 2]	Licence Compliance criteria	Measured value	Unit of measurement	Compliant with licence	Method of analysis	Procedural reference source	Procedural reference standard number	Annual mass load (kg)
	SELECT	SELECT	SELECT		SELECT		SELECT	max	SELECT	SELECT	SELECT	Other (please specify)		
x1	Wastewater/Sewe	volumetric flow	composite	Daily		250m3	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	252.4	m3/day	yes	Flow meter	Other (please specify)		
x1	Wastewater/Sewe	COD	composite	Daily		3000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	4520	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS ISO 15705:2002	61442.7
x1	Wastewater/Sewe	BOD	composite	Monthly		2000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1110	mg/L	yes	Titration	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	20485.3
x1	Wastewater/Sewe	Suspended Solids	composite	3/Week		400mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	186	mg/L	yes	Gravimetric analysis	EN ISO	BS EN 872:2005	3901.882

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)							Lic No:	W0041-01			Year	2015				
	x1	Wastewater/Sewe	Sulphate	composite	Monthly		1500mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	733	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1	13232.4
	x1	Wastewater/Sewe	Sulphides	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.133	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	3.68
	x1	Wastewater/Sewe	Detergents (as MBAS)	composite	Monthly		80mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1.84	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	40.93973
	x1	Wastewater/Sewe	Phenols (as total C)	composite	Monthly		3mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.41	mg/L	yes	HPLC	Other (please specify)	By HPLC	5.685
	x1	Wastewater/Sewe	Phosphorous	composite	3/Week		50mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	32.75	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	206.13
	x1	Wastewater/Sewe	Ammonia (as N)	composite	3/Week		250mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	249.9	mg/L	yes	Spectrophotometry (Colorimetry)	B.S. (British Standard)	BS 2690: Part 7:19	6311.95
	x1	Wastewater/Sewe	Nitrate (as N)	composite	Monthly		100mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	54.402	mg/L	yes	Spectrophotometry (Colorimetry)	Manufacturer method	HACH Lange Meth	54.402
	x1	Wastewater/Sewe	Silver	composite	Monthly		2mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1.91	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	1.91
	x1	Wastewater/Sewe	Aluminium	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	4.527	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	4.527
	x1	Wastewater/Sewe	Cobalt	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	3.22	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	3.22
	x1	Wastewater/Sewe	Cadmium and compounds (as Cd)	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.33	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	0.33
	x1	Wastewater/Sewe	Chromium and compounds (as Cr)	composite	Monthly		1mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.272	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	4.709
	x1	Wastewater/Sewe	Copper and compounds (as Cu)	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	5.737	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	82.62
	x1	Wastewater/Sewe	Iron	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	2.397	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	57.6757
	x1	Wastewater/Sewe	Mercury and compounds (as Hg)	composite	Monthly		.05mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.02	mg/L	yes	AFS	B.S. (British Standard)	BS EN 23506:2002,	0.295
5	x1	Wastewater/Sewe	Nickel and compounds (as Ni)	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.704	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	10.9147
	x1	Wastewater/Sewe	Lead and compounds (as Pb)	composite	Monthly		.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.206	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	4.73
6	x1	Wastewater/Sewe	Tin	composite	Monthly		2mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.00307	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	0.06419
7	x1	Wastewater/Sewe	Zinc and compounds (as Zn)	composite	Monthly		20mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.434	mg/L	yes	AAS (Atomic Absorption Spectroscopy)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	9.9688
8	x1	Wastewater/Sewe	Arsenic and compounds (as As)	composite	Monthly		1mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.0468	mg/L	yes	ICP / ICPMS (Inductively Coupled Plasma - Mass Spectrometry)	APHA / AWWA "Standard Methods"	AWWA/APHA, 20th	0.465
	x1	Wastewater/Sewe	Cyanides (as total CN)	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.05	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	2.94
	x1	Wastewater/Sewe	Chlorides (as Cl)	composite	Monthly		3000mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	1260	mg/L	yes	Spectrophotometry (Colorimetry)	US EPA	EPA Method 325.1	27503.9
	x1	Wastewater/Sewe	Fluorides (as total F)	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	2.87	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA/APHA 20th	77.3926
	x1	Wastewater/Sewe	Halogenated organic compounds (as AOX)	composite	Weekly		50mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.596	mg/L	yes	GCMS (Gas Chromatography Mass Spectroscopy)	US EPA	Modified : US EPA	7.52

AER Monitoring returns summary template-WATER/WASTEWATER(SEWER)						Lic No:	W0041-01		Year	2015				
x1	Wastewater/Sewe	Fats, Oils and Greases	composite	Monthly		.15mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	44	mg/L	yes	IR	APHA / AWWA "Standard Methods"	AWWA 21st Edition	853.435
x1	Wastewater/Sewe	Chromium III	composite	Monthly		10mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.272	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	4.74
x1	Wastewater/Sewe	Chromium VI	composite	Monthly		0.5mg/l	All results < 1.2 times ELV, plus 8 from ten results must be < ELV	0.01	mg/L	yes	Spectrophotometry (Colorimetry)	APHA / AWWA "Standard Methods"	AWWA 21st Edition	0.588

Comments
NOT APPLICABLE
Further details set out in Complaints/Incident tab

Environmental Management Programme/Continuous Improvement Programme template

Lic No: W0041-01 Year 2015

Highlighted cells contain dropdown menu click to view

			Additional Information
1	Do you maintain an Environmental Mangement System (EMS) for the site. If yes, please detail in additional information	Yes	
2	Does the EMS reference the most significant environmental aspects and associated impacts on-site	Yes	
3	Does the EMS maintain an Environmental Management Programme (EMP) as required in accordance with the licence requirements	Yes	
4	Do you maintain an environmental documentation/communication system to inform the public on environmental performance of the facility, as required by the licence	Yes	

Environmental Management Programme (EMP) report

Objective Category	Target	Status (% completed)	How target was progressed	Responsibility	Intermediate outcomes
Additional improvements	Consider additional roofing remaining chemical storage bunds (front yard) if appropriate.	50	No additional roofing installed in the reporting year.	Section Head	Improved Environmental Management Practices
Additional improvements	Provide local bunding for bulk waste storage tanks (i.e tank farm bund).	0	Financial approval received works to be scheduled over the next two years	Section Head	Installation of infrastructure
Additional improvements	Install pH probe in underground tank.	0	On hold - Review of site infrastructure has lead to a reduced the need for the installation of this. Other measures such as additional bunding will provide greater controls. The need for this pH probe will be re-assessed in 2017.	Individual	Increased compliance with licence conditions
Materials Handling/Storage/Bunding	Improve yard integrity in areas for loading and unloading of waste	90	New eco drain installed in the shredder area, and chemical resistant sealant laid over sections of concrete in the area. Additional patch repairs carried out in the front yard area. Further works planned for 2016.	Individual	Improved Environmental Management Practices

Environmental Management Programme/Continuous Improvement Programme template				Lic No:	W0041-01	Year	2015
Additional improvements	Continue to implement the agreed plan with a view to eliminating all pre-acquistion waste	90	Performance continues to be reported monthly to the Agency, approval is sought for any stock items on site for longer than 6 months. Specialised projects are underway to eliminate those wastes which are proving more difficult to deal with.	Section Head	Increased compliance with licence conditions		
SELECT		SELECT		SELECT	SELECT		

	Environmental Liabilities template	Lic No:	W0041-01	Year	2015

Click here to access EPA guidance on Environmental Liabilities and Financial provision

			Commentary
1	ELRA initial agreement status	Submitted and agreed by EPA	Being currently revised in accordance with the revised Agency guidance, submitted to the Agency on the 30.03.16
2	ELRA review status	Review required and completed	
3	Amount of Financial Provision cover required as determined by the latest ELRA	€426,875	
4	Financial Provision for ELRA status	Submitted and agreed by EPA	
5	Financial Provision for ELRA - amount of cover	€426,875	
6	Financial Provision for ELRA - type	bond	
7	Financial provision for ELRA expiry date	Continuous gurantee	
8	Closure plan initial agreement status	Closure plan submitted and agreed by EPA	Being currently revised in accordance with the revised Agency guidance
9	Closure plan review status	Review required and not completed	
10	Financial Provision for Closure status	Submitted and agreed by EPA	
11	Financial Provision for Closure - amount of cover	56,500	
12	Financial Provision for Closure - type	bond	
13	Financial provision for Closure expiry date	Continuous gurantee	

Groundwater/Soil monitoring template	Lic No:	W0041-01	Year	2015

			Comments	
1	Are you required to carry out groundwater monitoring as part of your licence requirements?	yes		Please provide an interpretation of groundwater monitoring data in the interpretation box below or if you require additional space please include a groundwater/contaminated land monitoring results interpretaion as an additional section in this AER
2	Are you required to carry out soil monitoring as part of your licence requirements?	no		
3	Do you extract groundwater for use on site? If yes please specify use in comment section	yes	For use in treatment process and flushing	
4	Do monitoring results show that groundwater generic assessment criteria such as GTVs or IGVs are exceeded or is there an upward trend in results for a substance? If yes, please complete the Groundwater Monitoring Guideline Template Report (link in cell G8) and submit separately through ALDER as a licensee return AND answer questions 5-12 below. Groundwater monitoring template	yes	See attached quarterly reports already previously submitted as part of quarterly returns	Groundwater monitoring was conducted on a quarterly basis in 2015 from required wells. Historically, the main contaminants of potential concern have been volatile organic compounds (VOC) with the highest concentrations detected in groundwater from MW4S between 2000-2002. Concentrations have declined steadily over time, and in December 2015 the total VOC concentration in MW4S was the lowest on record. In addition, groundwater conditions continue to be reducing and conducive to the in-situ biodegradation of the VOCs detected.
5	Is the contamination related to operations at the facility (either current and/or historic)	no	offsite source	
6	Have actions been taken to address contamination issues?If yes please summarise remediation strategies proposed/undertaken for the site	yes	Ongoing monitoring.	
7	Please specify the proposed time frame for the remediation strategy	N/A	Not applicable	
8	Is there a licence condition to carry out/update ELRA for the site?	yes		
9	Has any type of risk assesment been carried out for the site?	yes		
10	Has a Conceptual Site Model been developed for the site?	yes		
11	Have potential receptors been identified on and off site?	yes		
12	Is there evidence that contamination is migrating offsite?	no		

Table 1: Upgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration++	Average Concentration+	unit	GTV's*	SELECT**	Upward trend in pollutant concentration over last 5 years of monitoring data
16/12/2015	MW3	Vocs		Quarterly	134	95	ug/l			SELECT
							SELECT			SELECT

.+ where average indicates arithmetic mean

.++ maximum concentration indicates the maximum measured concentration from all monitoring results produced during the reporting year

Table 2: Downgradient Groundwater monitoring results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit	GTV's*	SELECT**	Upward trend in yearly average pollutant concentration over last 5 years of monitoring data
16/12/2015	MW4S	Vocs		Quarterly	1594	1099	ug/l			SELECT
							SELECT			SELECT

Groundwater/Soil monitoring template	Lic No:	W0041-01	Year	2015

*please note exceedance of generic assessment criteria (GAC) such as a Groundwater Threshold Value (GTV) or an Interim Guideline Value (IGV) or an upward trend in results for a substance indicates that further interpretation of monitoring results is required. In addition to completing the above table, please complete the Groundwater Monitoring Guideline Template Report at the link provided and submit separately through ALDER as a licensee return or as otherwise instructed by the EPA.	Groundwater monitoring template
More information on the use of soil and groundwater standards/ generic assessment criteria (GAC) and risk assessment tools is available in the EPA published guidance (see the link in G31)	Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013).

**Depending on location of the site and proximity to other sensitive receptors alternative Receptor based Water Quality standards should be used in addition to the GTV e.g. if the site is close to surface water compare to Surface Water Environmental Quality Standards (SWEQS), If the site is close to a drinking water supply compare results to the Drinking Water Standards (DWS)	Surface water EQS	Groundwater regulations GTV's	Drinking water (private supply) standards	Drinking water (public supply) standards	Interim Guideline Values (IGV)

Groundwater/Soil monitoring template Lic No: W0041-01 Year 2015

Table 3: Soil results

Date of sampling	Sample location reference	Parameter/ Substance	Methodology	Monitoring frequency	Maximum Concentration	Average Concentration	unit
							SELECT
							SELECT

Where additional detail is required please enter it here in 200 words or less

Bund/Pipeline testing template | Lic No: W0041-01 | Year 2015

Bund testing | dropdown menu click to see options

			Additional information
1	Are you required by your licence to undertake integrity testing on bunds and containment structures ? if yes please fill out table B1 below listing all **new bunds and containment structures** on site, in addition to **all bunds which failed** the integrity test-**all bunding structures which failed including mobile bunds must be listed in the table below, please include all bunds outside the licenced testing period** (mobile bunds and chemstore included)	Yes	
2	Please provide integrity testing frequency period	3 years	
3	Does the site maintain a register of bunds, underground pipelines (including stormwater and foul), Tanks, sumps and containers? (containers refers to "Chemstore" type units and mobile bunds)	Yes	
4	How many bunds are on site?	30	
5	How many of these bunds have been tested within the required test schedule?	7	
6	How many mobile bunds are on site?	24	
7	Are the mobile bunds included in the bund test schedule?	Yes	
8	How many of these mobile bunds have been tested within the required test schedule?	10	
9	How many sumps on site are included in the integrity test schedule?	6	
10	How many of these sumps are integrity tested within the test schedule?	2	
	Please list any sump integrity failures in table B1		
11	Do all sumps and chambers have high level liquid alarms?	No	
12	If yes to Q11 are these failsafe systems included in a maintenance and testing programme?	SELECT	
13	Is the Fire Water Retention Pond included in your integrity test programme?	No	

Table B1: Summary details of bund /containment structure integrity test

Bund/Containment structure ID	Type	Specify Other type	Product containment	Actual capacity	Capacity required*	Type of integrity test	Other test type	Test date	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
AP	reinforced concrete		2.3, 6.1, 8, 9, NON-REG, DIESEL	51,000		Other (please specify)	hydrostatic test	19/03/2015	awaitining report	Fail		retested	18/03/2016	pass
AQ	reinforced concrete		5.1, 9, NON-REG	84,000		Other (please specify)	hydrostatic test	18/03/2015	awaitining report	Fail		retested	19/02/2016	pass
AT	reinforced concrete		8, 9, NON-REG	126,000		Other (please specify)	hydrostatic test	19/03/2015	awaitining report	Fail		retested	18/03/2016	pass
AX	reinforced concrete		8, 9, NON-REG	147,000		Other (please specify)	hydrostatic test	19/10/2015	awaitining report	Fail	repairs needed			
	SELECT					SELECT			Yes	SELECT		SELECT		

* Capacity required should comply with 25% or 110% containment rule as detailed in your licence

			Commentary
15	Has integrity testing been carried out in accordance with licence requirements and are all structures tested in line with BS8007/EPA Guidance?	bunding and storage guidelines	Yes
16	Are channels/transfer systems to remote containment systems tested?		No
17	Are channels/transfer systems compliant in both integrity and available volume?		No

Pipeline/underground structure testing

1	Are you required by your licence to undertake integrity testing* on underground structures e.g. pipelines or sumps etc ? if yes please fill out table 2 below listing all underground structures and pipelines on site **which failed the integrity test and all which have not been tested withing the integrity test period as specified**	Yes	
2	Please provide integrity testing frequency period	5 years	

*please note integrity testing means water tightness testing for process and foul pipelines (as required under your licence)

Table B2: Summary details of pipeline/underground structures integrity test

Bund/Pipeline testing template Lic No: W0041-01 Year 2015

Structure ID	Type system	Material of construction:	Does this structure have Secondary containment?	Type of secondary containment	Type integrity testing	Integrity reports maintained on site?	Results of test	Integrity test failure explanation <50 words	Corrective action taken	Scheduled date for retest	Results of retest(if in current reporting year)
											SELECT

Please use commentary for additional details not answered by tables/ questions above

Resource Usage/Energy efficiency summary	Lic No:	W0041-01	Year	2015

			Additional information
1	When did the site carry out the most recent energy efficiency audit? Please list the recommendations in table 3 below	Enter date of audit	
2	Is the site a member of any accredited programmes for reducing energy usage/water conservation such as the SEAI programme linked to the right? If yes please list them in additional information	No	SEAI - Large Industry Energy Network (LIEN)
3	Where Fuel Oil is used in boilers on site is the sulphur content compliant with licence conditions? Please state percentage in additional information	No	

Table R1 Energy usage on site

Energy Use	Previous year	Current year	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*
Total Energy Used (MWHrs)		617030		
Total Energy Generated (MWHrs)				
Total Renewable Energy Generated (MWHrs)				
Electricity Consumption (MWHrs)				
Fossil Fuels Consumption:				
Heavy Fuel Oil (m3)	9.285	8.948		
Light Fuel Oil (m3)				
Natural gas (m3)	2.244	2.344		
Coal/Solid fuel (metric tonnes)				
Peat (metric tonnes)				
Renewable Biomass				
Renewable energy generated on site				

* where consumption of energy can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Table R2 Water usage on site

					Water Emissions	Water Consumption	
Water use	Water extracted Previous year m3/yr.	Water extracted Current year m3/yr.	Production +/- % compared to previous reporting year**	Energy Consumption +/- % vs overall site production*	Volume Discharged back to environment(m^3yr):	Volume used i.e not discharged to environment e.g. released as steam m3/yr	Unaccounted for Water:
Groundwater							
Surface water							
Public supply	12121	10751			10751		
Recycled water							
Total							

* where consumption of water can be compared to overall site production please enter this information as percentage increase or decrease compared to the previous reporting year.

** where site production information is available please enter percentage increase or decrease compared to previous year

Table R3 Waste Stream Summary

	Total	Landfill	Incineration	Recycled	Other
Hazardous (Tonnes)					
Non-Hazardous (Tonnes)		1830		0.63	

Resource Usage/Energy efficiency summary Lic No: W0041-01 Year 2015

Table R4: Energy Audit finding recommendations

Date of audit	Recommendations	Description of Measures proposed	Origin of measures	Predicted energy savings %	Implementation date	Responsibility	Completion date	Status and comments
			SELECT					
			SELECT					
			SELECT					

Table R5: Power Generation: Where power is generated onsite (e.g. power generation facilities/food and drink industry)please complete the following information

	Unit ID	Unit ID	Unit ID	Unit ID	Station Total
Technology					
Primary Fuel					
Thermal Efficiency					
Unit Date of Commission					
Total Starts for year					
Total Running Time					
Total Electricity Generated (GWH)					
House Load (GWH)					
KWH per Litre of Process Water					
KWH per Litre of Total Water used on Site					

WASTE SUMMARY	Lic No:	W0041-01	Year	2015
SECTION A-PRTR ON SITE WASTE TREATMENT AND WASTE TRANSFERS TAB- TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES	PRTR facility logon	dropdown list click to see options		

SECTION B- WASTE ACCEPTED ONTO SITE-TO BE COMPLETED BY ALL IPPC AND WASTE FACILITIES

			Additional Information
1	Were any wastes accepted onto your site for recovery or disposal or treatment prior to recovery or disposal within the boundaries of your facility ?; (waste generated within your boundaries is to be captured through PRTR reporting) If yes please enter details in table 1 below	Yes	
2	Did your site have any rejected consignments of waste in the current reporting year? If yes please give a brief explanation in the additional information	No	
3	Was waste accepted onto your site that was generated outside the Republic of Ireland? If yes please state the quantity in tonnes in additional information	No	

Table 1 Details of waste accepted onto your site for recovery, disposal or treatment (do not include wastes generated at your site, as these will have been reported in your PRTR workbook)

Licenced annual tonnage limit for your site (total tonnes/annum)	EWC code European Waste Catalogue EWC codes	Source of waste accepted	Description of waste accepted **Please enter an accurate and detailed description - which applies to relevant EWC code** European Waste Catalogue EWC codes	Quantity of waste accepted in current reporting year (tonnes)	Quantity of waste accepted in previous reporting year (tonnes)	Reduction/ Increase over previous year +/ - %	Reason for reduction/ increase from previous reporting year	Packaging Content (%)- only applies if the waste has a packaging component	Disposal/Recovery or treatment operation carried out at your site and the description of this operation	Quantity of waste remaining on site at the end of reporting year (tonnes)	Comments -
34000									*D1-Deposit into or onto land*		*This line not applicable*
	020701	*02-WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING*	wastes from washing, cleaning and mechanical reduction of raw materials	3.84	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	050105*	*05- WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL*	Oil - refinery spillage	97.98	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	'060101	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	sulphuric acid and sulphurous acid	725.22	*395.11*	46%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	61.386	
	060102*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	hydrochloric acid	30.39	*390.7*	-1185%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.608	
	060103*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	hydrofluoric acid	8.41	*0.276*	97%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.578	
	060104*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	phosphoric and phosphorous acid	428.13	*192.034*	55%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	060105*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	Nitric acid and nitrous acid	5.06	*14.78*	-192%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	1.56	

WASTE SUMMARY					Lic No:	W0041-01		Year	2015		
	060106*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	Other acids	1,204.48	*1581.168*	-31%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	27.921	
	060203*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	Ammonium hydroxide	1.44	*1.273*	12%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	060204*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	Sodium and potassium hydroxide	778.33	*573.006*	26%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	29.672	
	060205*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	Other bases	78.90	*106.921*	-36%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	10.012	
	060311*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	solid salts and solutions containing cyanides	39.26	*32.457*	17%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	15.358	
	060403*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	wastes containing arsenic	0.45	*0.59*	-30%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	

WASTE SUMMARY					Lic No:	W0041-01	Year	2015			
	060404*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	wastes containing mercury	0.00	*0.121*	-2925%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	060405*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	wastes containing other heavy metals	4.45	*0.445*	90%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	060502*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	sludges from on-site effluent treatment containing hazardous substances	0.85	*0*	100%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	061302*	*06- WASTES FROM INORGANIC CHEMICAL PROCESSES*	spent activated carbon (except 06 07 02)	81.62	*19.237*	76%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	14.556	

WASTE SUMMARY					Lic No:	W0041-01		Year	2015		
	070103*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	organic halogenated solvents, washing liquids and mother liquors	1.03	*0*	100%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.024	
	070104*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	other organic solvents, washing liquids and mother liquors	86.40	*91.734*	-6%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	9.462	
	070110*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	other filter cakes and spent absorbents	1.63	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	070204*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	other organic solvents, washing liquids and mother liquors	5.13	*4.782*	7%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.535	
	070207*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	halogenated still bottoms and reaction residues	1.16	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	070213	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	waste plastic	0.23	*0*	100%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	070301*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	Aqueous washing liquids and mother liquors	59.98	*21.52*	64%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	

WASTE SUMMARY					Lic No:	W0041-01	Year	2015			
	070401*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	aqueous washing liquids and mother liquors	11.50	*0*	100%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	11.49	
	070501*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	Aqueous washing liquids and mother liquors	1,981.10	*281.82*	86%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	557.2	
	070504*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	other organic solvents, washing liquids and mother liquors	713.8	*550.675*	23%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.175	
	070510*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	Other filter cakes and spent absorbents	15.04	*5.85*	61%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	1.85	
	070513*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	solid wastes containing dangerous substances	3.38	*4.119*	-22%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.144	
	070601*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	Aqueous washing liquids and mother liquors	9.64	*2.395*	75%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	070701*	*07- WASTES FROM ORGANIC CHEMICAL PROCESSES*	aqueous washing liquids and mother liquors	1,180.55	*637.995*	46%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	080111*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste paint and varnish containing organic solvents or other dangerous substances	851.06	*754.404*	11%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	16.989	
	080113*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	sludges from paint or varnish containing organic solvents or other dangerous substances	1.40	*6.01*	-328%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	1.403	

WASTE SUMMARY					Lic No:	W0041-01		Year	2015		
	080114	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	sludges from paint or varnish other than those mentioned in 08 01 13	4.71	*12.331*	-162%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	080115*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances	3.18	*0.199*	94%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.06	
	80116	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15	19.24	*15.36*	20%	*fluctuations in market conditions*		*D10-Incineration on land*	0	
	80117*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	wastes from paint or varnish removal containing organic solvents or other dangerous substances	77.90	*55.642*	29%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	4.306	
	080119*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	aqueous suspensions containing paint or varnish containing organic solvents or other dangerous substances	628.82	*676.596*	-8%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	080121*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste paint or varnish remover	0.86	*1.289*	-50%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	'080201	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste coating powders	4.37	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	080308*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	aqueous liquid waste containing ink	36.40	*154.077*	-323%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	

WASTE SUMMARY					Lic No:	W0041-01	Year	2015			
	080312*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste ink containing dangerous substances	12.71	*33.74*	-165%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	3.231	
	080313	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste ink other than thos	6.75	*5.568*	17%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.423	
	'080409	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste adhesives and seala	19.14	*41.113*	-115%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	1.655	
	080411*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	adhesive and sealant sludges containing organic solvents or other dangerous substances	0.28	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	080415*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances	230.17	*288.65*	-25%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.025	
	080501*	*08- WASTES FORM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS,) ADHESIVES, SEALANTS AND PRINTING INKS*	waste isocyanates	1.65	*1.877*	-13%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.007	
	090101*	*09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY*	water-based developer and activator solutions	0.23	*3.205*	-1281%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	

WASTE SUMMARY					Lic No:	W0041-01		Year	2015		
	090102*	*09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY*	water-based offset plate developer solutions	0.51	*0.564*	-10%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.152	
	090104*	*09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY*	fixed solutions	64.48	*93.413*	-45%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.282	
	090105*	*09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY*	bleach solutions and bleach fixer solutions	43.62	*24.616*	44%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	12.11	
	090107	*09- WASTES FROM THE PHOTOGRAPHIC INDUSTRY*	photographic film and paper containing silver or silver compounds	0.26	*0.466*	-77%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.075	
	100104*	*10- WASTES FROM THERMAL PROCESSES*	oil fly ash and boiler dust	0.19	*4.904*	-2454%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	100122*	*10- WASTES FROM THERMAL PROCESSES*	aqueous sludges from boiler cleansing containing dangerous substances	12.34	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	110105*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	pickling acids	70.45	*41.743*	41%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	6.26	
	110106*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	acids not otherwise specified	125.54	*53.929*	57%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.399	
	110107*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	pickling bases	0.00	*8.957*	#DIV/0!	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0	
	110108*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	phosphatising sludges	14.46	*0.2*	99%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	110109*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	sludges and filter cakes containing dangerous substances	147.59	*163.163*	-11%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	16.204	

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	110110	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	sludges and filter cakes other than those mentioned in 11 01 09	183.86	*210.082*	-14%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	12.287	
	110111*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	aqueous rinsing liquids containing dangerous substances	120.20	*271.575*	-126%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	2.197	
	110113*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	degreasing wastes containing dangerous substances	72.97	*44.142*	40%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.228	
	110116*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	saturated or spent ion exchange resins	31.84	*6.85*	78%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	110198*	*11- WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY*	other wastes containing dangerous substances	9.37	*445.185*	-4654%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	2.698	
	120104	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	non-ferrous metal dust and particles	6.63	*5.589*	16%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0.809	
	120105	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	plastics shavings and turnings	0.00	*0.647*	#DIV/0!	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0	
	120107*	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	mineral-based machining oils free of halogens (except emulsions and solutions)	0.13	*3.366*	-2550%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.081	
	120109*	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	machining emulsions and solutions free of halogens	23.39	*29.713*	-27%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.939	
	120114*	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	machining sludges containing dangerous substances	4.32	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	120115	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	machining sludges other than those mentioned in 12 01 14	0.30	*0.26*	13%	*fluctuations in market conditions*		*R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)*	0.298	

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	120116*	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	waste blasting material containing dangerous substances	96.26	*161.506*	-68%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	11.66666667	
	120117	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	waste blasting material other than those mentioned in 12 01 16	3.20	*9.893*	-210%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	120121	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	spent grinding bodies and grinding materials other than those mentioned in 12 01 20	3.85	*5.688*	-48%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.28	
	120301	*12-WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS*	aqueous washing liquids	4.40	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	130109*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	mineral-based chlorinated hydraulic oils	1.67	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	130110*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	mineral based non-chlorinated hydraulic oils	0.00	*0.501*	#DIV/0!	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	0	
	130111*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	synthetic hydraulic oils	0.45	*0.975*	-118%	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	0	
	130113*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	other hydraulic oils	67.85	*96.412*	-42%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	5.609	
	130204*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	mineral-based chlorinated engine, gear and lubricating oils	0.02	*0.054*	-145%	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	0	
	130206*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	synthetic engine, gear and lubricating oils	0.13	*0.101*	24%	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	0	

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	130208*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	other engine, gear and lubricating oils	137.80	*106.714*	23%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	5.521	
	130307*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	mineral-based non-chlorinated insulating and heat transmission oils	2.04	*0*	100%	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	0	
	130308*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	synthetic insulating and heat transmission oils	2.82	*2.174*	23%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.111	
	130310*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	other insulating and heat transmission oils	10.77	*6.802*	37%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.776	
	130507*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	oily water from oil/water separators	1.33	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	130701*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	fuel oil and diesel	10.47	*4.22*	60%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0.09	
	130703*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	other fuels (including mixtures)	1.37	*0.286*	79%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	130802*	*13- OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)*	other emulsions	0.55	*12.083*	-2109%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	140603*	*14- WASTE ORGANIC SOLVENTS, REFRIGERANTS AND PROPELLANTS (except 07 and 08)*	other solvents and solvent mixtures	12.69	*17.136*	-35%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	3.883	
	150102	*15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED*	plastic packaging	27.44	*5.978*	78%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	2.528	
	150110*	*15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED*	packaging containing residues of or contaminated by dangerous substances	488.17	*269.259*	45%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	62.517	

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	150202*	*15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	197.40	*225.236*	-14%	*fluctuations in market conditions*		*R9-Oil re-refining or other reuses of oil*	7.146	
	150203	*15- WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED*	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	32.50	*71.749*	-121%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	3.61	
	160114*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	antifreeze fluids containing dangerous substances	0.00	*31.157*	#DIV/0!	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	160115	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	antifreeze fluids other than those mentioned in 16 01 14	0.17	*2.23*	-1212%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	160213*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12	1.23	*0.672*	45%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0.437	
	160303*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	inorganic wastes containing dangerous substances	1.51	*2.391*	-59%	*fluctuations in market conditions*		*R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)*	1.505	
	160304	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	inorganic wastes other than those mentioned in 16 03 03	6.28	*40.07292*	-538%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	160305*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	organic wastes containing dangerous substances	167.60	*105.1*	37%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	38.462	
	160306	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	organic wastes other than those mentioned in 16 03 05	0.27	*11.9*	-4391%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	160504*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	gases in pressure containers (including halons) containing dangerous substances	2.00	*2.009*	0%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0.511	

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	160506	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	414.24	*376.947*	9%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	57.23264706	
	160507*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	discarded inorganic chemicals consisting of or containing dangerous substances	35.82	*96.515*	-169%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	5.365	
	160508*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	discarded organic chemicals consisting of or containing dangerous substances	116.91	*159.945*	-37%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	8.33	
	160509	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	46.95	*231.901*	-394%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	3.413	
	160601*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	lead batteries	0.12	*0.268*	-123%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0	
	160604	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	alkaline batteries (except 16 06 03)	0.04	*0*	100%	*fluctuations in market conditions*		*R13-Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage)*	0.066	
	160605	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	other batteries and accumulators	0.06	*0.075*	-36%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0	
	160708*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	wastes containing oil	5.02	*17.565*	-250%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	160709*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	wastes containing other dangerous substances	153.51	*121.673*	21%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	2.117	
	160901*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	permanganates, for example potassium permanganate	0.01	*10.684*	-133450%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	160903*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	peroxides, for example hydrogen peroxide	0.00	*10.595*	#DIV/0!	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	

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	161001*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	aqueous liquid wastes containing dangerous substances	1,122.52	*1079.282*	4%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	1.118	
	161002	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	aqueous liquid wastes other than those mentioned in 16 10 01	566.70	*8.489*	99%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	161101*	*16- WASTES NOT OTHERWISE SPECIFIED IN THE LIST*	carbon-based linings and refractories from metallurgical processes containing dangerous substances	12.62	*0*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	170204*	*17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)*	glass, plastic and wood containing or contaminated with dangerous substances	7.36	*2.947*	60%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	170503*	*17- CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)*	soil and stones containing dangerous substances	6.13	*10.417*	-70%	*fluctuations in market conditions*		*R5-Recycling/reclamation or other inorganic materials which includes soil celaning resuling in recovery of the soil and recycling of inorganic construction materials*	0	
	180107	*18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)*	chemicals other than those mentioned in 18 01 06	0.33	*0*	100%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	180109	*18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)*	medicines other than those mentioned in 18 01 08	0.15	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	

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	180110*	*18- WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)*	amalgam waste from dental care	3.00	*1.796*	40%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.769	
	190703	*19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE*	landfill leachate other than those mentioned in 19 07 0	19,487.48	*19959.3*	-2%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	190904	*19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE*	spent activated carbon	25.24	*4.42*	82%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	190905	*19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE*	saturated or spent ion exchange resins	8.96	*0.153*	98%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0.05	
	190906	*19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE*	solutions and sludges from regeneration of ion exchangers	21.82	*36.321*	-66%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	191106	*19- WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE*	sludges from on-site effluent treatment other than those mentioned in 191105	16.98	*28.456*	-68%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	

WASTE SUMMARY					Lic No:	W0041-01		Year	2015		
	200114*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	acids	8.06	*0.018*	100%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0	
	200115*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	alkalines	0.00	*68.254*	#DIV/0!	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	200119*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	pesticides	18.75	*0.22*	99%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	12.752	
	200121*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	edible oil and fat	0.22	*0.21*	5%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0.026	
	200125	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	edible oil and fat	1.51	*0.831*	45%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	

WASTE SUMMARY					Lic No:	W0041-01	Year	2015			
	200127*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	paint, inks, adhesives and resins containing dangerous substances	22.06	*32.77*	-49%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	2.777	
	200128	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	paint, inks, adhesives and resins other than those mentioned in 20 01 27	0.13	*0.033*	74%	*fluctuations in market conditions*		*R12-Exchange of waste for submission to any of the operations numbered R1 to R11 (if there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as amongst others, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, seperating, blending or mixing prior to submission to any of the operations numbered R1 to R11)*	0	
	200129*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	detergents containing dangerous substances	7.78	*204.295*	-2525%	*fluctuations in market conditions*		*D9-Physico-Chemical treatment not specified elsewhere which results in fial compounds or mixtures wheich are discarded by means D1 to D12*	0.757	
	200130	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	detergents other than those mentioned in 20 01 29	0.39	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	200131*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	cytotoxic and cytostatic medicines	14.83	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	2.202	
	200132	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	medicines other than those mentioned in 20 01 31	0.01	*0*	100%	*fluctuations in market conditions*		*R1-Use principally as a fuel or other means to generate energy*	0	
	200133*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	0.79	*3.053*	-285%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0.033	

WASTE SUMMARY					Lic No:	W0041-01	Year	2015			
	200135*	*20- MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS*	Discarded electronic equipment other than those mentioned in 200121 and 200123 containing hazardous substances	0.99	*2.296*	-132%	*fluctuations in market conditions*		*R4- Recycling/reclamation of metals and metal compounds*	0	

SECTION C-TO BE COMPLETED BY ALL WASTE FACILITIES (waste transfer stations, Composters, Material recovery facilities etc) EXCEPT LANDFILL SITES

4	Is all waste processing infrastructure as required by your licence and approved by the Agency in place? If no please list waste processing infrastructure required onsite	Yes
5	Is all waste storage infrastructure as required by your licence and approved by the Agency in place? If no please list waste storage infrastructure required on site	Yes
6	Does your facility have relevant nuisance controls in place?	Yes
7	Do you have an odour management system in place for your facility? If no why?	Yes
8	Do you maintain a sludge register on site?	No

SECTION D-TO BE COMPLETED BY LANDFILL SITES ONLY

Table 2 Waste type and tonnage-landfill only

Waste types permitted for disposal	Authorised/licenced annual intake for disposal (tpa)	Actual intake for disposal in reporting year (tpa)	Remaining licensed capacity at end of reporting year (m3)	Comments

Table 3 General information-Landfill only

Area ID	Date landfilling commenced	Date landfilling ceased	Currently landfilling	Private or Public Operated	Inert or non-hazardous	Predicted date to cease landfilling	Licence permits asbestos	Is there a separate cell for asbestos?	Accepted asbestos in reporting year	Total disposal area occupied by waste	Lined disposal area occupied by waste	Unlined area
										SELECT UNIT	SELECT UNIT	SELECT UNIT
Cell 8												

WASTE SUMMARY Lic No: W0041-01 Year 2015

Table 4 Environmental monitoring-landfill only

Landfill Manual-Monitoring Standards

Was meterological monitoring in compliance with Landfill Directive (LD) standard in reporting year +	Was leachate monitored in compliance with LD standard in reporting year	Was Landfill Gas monitored in compliance with LD standard in reporting year	Was SW monitored in compliance with LD standard in reporting year	Have GW trigger levels been established	Were emission limit values agreed with the Agency (ELVs)	Was topography of the site surveyed in reporting year	Has the statement under S53(A)(5) of WMA been submitted in reporting year	Comments

.+ please refer to Landfill Manual linked above for relevant Landfill Directive monitoring standards

Table 5 Capping-Landfill only

Area uncapped*	Area with temporary cap	Area with final cap to LD Standard m2 ha, a	Area capped other	Area with waste that should be permanently capped to date under licence	What materials are used in the cap	Comments
SELECT UNIT	SELECT UNIT					

*please note this includes daily cover area

Table 6 Leachate-Landfill only

9	Is leachate from your site treated in a Waste Water Treatment Plant?	SELECT
10	Is leachate released to surface water? If yes please complete leachate mass load information below	SELECT

Volume of leachate in reporting year(m3)	Leachate (BOD) mass load (kg/annum)	Leachate (COD) mass load (kg/annum)	Leachate (NH4) mass load (kg/annum)	Leachate (Chloride) mass load kg/annum	Leachate treatment on-site	Specify type of leachate treatment	Comments

Please ensure that all information reported in the landfill gas section is consistent with the Landfill Gas Survey submitted in conjunction with PRTR returns

Table 7 Landfill Gas-Landfill only

Gas Captured&Treated by LFG System m3	Power generated (MW / KWh)	Used on-site or to national grid	Was surface emissions monitoring performed during the reporting year?	Comments
			SELECT	

Comments on liner type

Complaints and Incidents summary template Lic No: W0041-01 Year 2015

Complaints

Have you received any environmental complaints in the current reporting year? If yes please complete summary details of complaints received on site in table 1 below	No	Additional information

Table 1 Complaints summary

Date	Category	Other type (please specify)	Brief description of complaint (Free txt <20 words)	Corrective action< 20 words	Resolution status	Resolution date	Further information
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		
	SELECT				SELECT		

Total complaints open at start of reporting year	0
Total new complaints received during reporting year	0
Total complaints closed during reporting year	0
Balance of complaints end of reporting year	0

Incidents

Have any incidents occurred on site in the current reporting year? Please list all incidents for current reporting year in Table 2 below	Yes	Additional information

*For information on how to report and what constitutes an incident	What is an incident

Table 2 Incidents summary

Date of occurrence	Incident nature	Location of occurrence	Incident category*please refer to guidance	Receptor	Cause of incident	Other cause(please specify)	Activity in progress at time of incident	Communication	Occurrence	Corrective action<20 words	Preventative action <20 words	Resolution status	Resolution date	Likelihood of reoccurence
17/10/2015	Breach of ELV	Licenced discharge point (ty	1. Minor	Sewer	Operational controls		Normal activities	EPA	New			Complete		Low
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT
	SELECT	SELECT	SELECT	SELECT	SELECT		SELECT	SELECT	SELECT			SELECT		SELECT

Total number of incidents current year	1
Total number of incidents previous year	0
% reduction/ increase	

4.1 RELEASES TO AIR

Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
06	**Ammonia (NH3)**	M	CRM	EN 14791:2005	0.02	0.02	0.0	0.0
80	Chlorine and inorganic compounds (as HCl)	M	EN 1911-1 to 3:2003	EN 1911-1 to 3:2003	0.02	0.02	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	M	EN 14792:2005	EN 14792:2005	0.74	0.74	0.0	0.0
11	Sulphur oxides (SOx/SO2)	M	CRM	TGN 21	10.93	10.93	0.0	0.0
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
351	Total Organic Carbon (as C)	M	EN 13649:2001	EN 1484-1997	16.36	16.36	0.0	0.0
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under T(total) KG/yr for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Shannon Environmental Services Ltd

Please enter summary data on the quantities of methane flared and / or utilised	**T (Total) kg/Year**	**M/C/E**	**Method Used**		**Facility Total Capacity m3 per hour**	
			Method Code	**Designation or Description**		
Total estimated methane generation (as per site model)	0.0				N/A	
Methane flared	0.0				0.0	(Total Flaring Capacity)
Methane utilised in engine/s	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A	

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
06	Ammonia (NH3)	M	OTH	BS 2690: Part 7:1968/BS6068: Part 2. 11:1984 / APHA -4500-NH3- D	6311.95	6311.95	0.0	0.0
17	Arsenic and compounds (as As)	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	0.465	0.465	0.0	0.0
18	Cadmium and compounds (as Cd)	M	OTH	AWWA 21st Edition 2005 3111 A	0.3368	0.3368	0.0	0.0
79	Chlorides (as Cl)	M	OTH	EPA Method 325.1 & 325.2	27503.9	27503.9	0.0	0.0
19	Chromium and compounds (as Cr)	M	OTH	AWWA 21st Edition 2005 3111 A	4.709	4.709	0.0	0.0
20	Copper and compounds (as Cu)	M	OTH	AWWA 21st Edition 2005 3111 A	82.625	82.625	0.0	0.0
82	Cyanides (as total CN)	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500	2.94	2.94	0.0	0.0
83	Fluorides (as total F)	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500 F	77.39	77.39	0.0	0.0
21	Mercury and compounds (as Hg)	M	OTH	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	0.295	0.295	0.0	0.0
22	Nickel and compounds (as Ni)	M	OTH	AWWA 21st Edition 2005 3111 A	10.914	10.914	0.0	0.0
71	Phenols (as total C)	M	OTH	By HPLC	5.68	5.68	0.0	0.0
13	Total phosphorus	M	OTH	AWWA 21st Edition 2005 4500-P	206.1366	206.1366	0.0	0.0
24	Zinc and compounds (as Zn)	M	OTH	AWWA 21st Edition 2005 3111 A	9.9688	9.9688	0.0	0.0
23	Lead and compounds (as Pb)	M	OTH	AWWA 21st Edition 2005 3111 A	4.73	4.73	0.0	0.0
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
358	**Tin**	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	0.06419	0.06419	0.0	0.0
355	Aluminium	M	OTH	AWWA/APHA, 20th Edition 1999, Method 3125B	4.527	4.527	0.0	0.0
356	Cobalt	M	OTH	AWWA 21st Edition 2005 3111 A	3.22	3.22	0.0	0.0
303	BOD	M	OTH	AWWA/APHA, 20th Ed., 1999 Method 5210B	20485.3	20485.3	0.0	0.0
306	COD	M	ALT	BS ISO 15705:2002	61442.7	61442.7	0.0	0.0
314	Fats, Oils and Greases	M	OTH	AWWA 21st Edition 2005 5520	853.435	853.435	0.0	0.0
308	Detergents (as MBAS)	M	OTH	AWWA/APHA 20th Edition 1999, Method 5540 C	40.939	40.939	0.0	0.0
357	Iron	M	OTH	AWWA 21st Edition 2005 3111 A	57.67	57.67	0.0	0.0
327	Nitrate (as N)	M	OTH	HACH Lange Method 10020	54.402	54.402	0.0	0.0
354	Silver	M	OTH	AWWA 21st Edition 2005 3111 A	1.91	1.91	0.0	0.0
240	Suspended Solids	M	ALT	BS EN 872:2005	3901.82	3901.82	0.0	0.0
343	Sulphate	M	OTH	EPA Method 325.1 & 325.2	13232.0	13232.0	0.0	0.0

353	Sulphides	M	OTH	AWWA/APHA 20th Edition 1999, Method 4500B & C	3.6864	3.6864	0.0	0.0
331	Organohalogens	M	OTH	Modified : US EPA Method 8260b & 624	7.52	7.52	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

| PRTR# : W0041 | Facility Name : Shannon Environmental Services Ltd | Filename : AER 2015 PRTR.xls | Return Year : 2015 | 31/03/2016 16:58

Please enter all quantities on this sheet in Tonnes

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Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	06 01 01	Yes	3.22	sulphuric acid and sulphurous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 02	Yes	8.58	hydrochloric acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 03	Yes	2.13	hydrochloric acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 04	Yes	0.04	phosphoric and phosphorous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 05	Yes	4.02	nitric acid and nitrous acid	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 01 06	Yes	86.95	other acids	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 03	Yes	1.44	ammonium hydroxide	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 04	Yes	15.44	sodium and potassium hydroxide	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 02 05	Yes	8.62	other bases	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 03 11	Yes	0.46	solid salts and solutions containing cyanides	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 04 03	Yes	0.45	wastes containing arsenic	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	06 04 04	Yes	0.09	wastes containing mercury	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 04 05	Yes	4.67	wastes containing other heavy metals	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	06 13 02	Yes	71.13	spent activated carbon (except 06 07 02)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 01 04	Yes	11.73	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,,.,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,,.,Belgium	No 49 B-7181 ,Seneffe ,,.,Belgium
To Other Countries	07 01 04	Yes	53.45	other organic solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	07 01 04	Yes	0.09	other organic solvents, washing liquids and mother liquors	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,,,Ireland	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,,.,Belgium	No 49 B-7181 ,Seneffe ,,.,Belgium
To Other Countries	07 02 04	Yes	4.97	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 02 07	Yes	1.57	halogenated still bottoms and reaction residues	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 02 13	No	0.23	waste plastic	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 05 04	Yes	0.17	other organic solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 05 04	Yes	710.41	other organic solvents, washing liquids and mother liquors	R2	M	Weighed	Abroad	Haltermann Ltd (now - Chemoxy International Ltd.) ,BT9828	All Saints Refinery ,Cargo Fleet Road ,Middlesbrough ,TS3 6AF ,United Kingdom	Haltermann Ltd. (now - Chemoxy International Ltd.),BT9828,All Saints Refinery ,Cargo Fleet Road ,Middlesbrough ,TS3 6AF ,United Kingdom	All Saints Refinery ,Cargo Fleet Road ,Middlesbrough ,TS3 6AF ,United Kingdom
To Other Countries	07 05 10	Yes	14.19	other filter cakes and spent absorbents	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	07 05 13	Yes	4.08	solid wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 01 11	Yes	37.61	waste paint and varnish containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 01 11	Yes	0.43	waste paint and varnish containing organic solvents or other dangerous substances	R3	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
To Other Countries	08 01 14	No	5.13	sludges from paint or varnish other than those mentioned in 08 01 13	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	08 01 17	Yes	75.54	wastes from paint or varnish removal containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 01 21	Yes	0.86	waste paint or varnish remover	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 03 08	No	7.21	aqueous liquid waste containing ink	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	08 03 12	Yes	11.79	waste ink containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 03 13	No	6.77	waste ink other than those mentioned in 08 03 12	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	08 04 09	Yes	29.85	waste adhesives and sealants containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 04 11	Yes	0.28	adhesive and sealant sludges containing organic solvents or other dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	08 05 01	Yes	1.65	waste isocyanates	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 01	Yes	0.09	water-based developer and activator solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	09 01 02	Yes	0.36	water-based offset plate developer solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	09 01 04	Yes	0.33	fixed solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	09 01 04	Yes	2.93	fixed solutions	R2	M	Weighed	Offsite in Ireland	SRCL,W0055-02	Units 420 - 430 Beech Road,Western Industrial Estate,NAAS Road,Dublin 12,Ireland	SRCL,W0055-02	Units 420 - 430 Beech Road,Western Industrial Estate,NAAS Road,Dublin 12,Ireland
To Other Countries	09 01 07	No	0.38	photographic film and paper containing silver or silver compounds	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	10 01 04	Yes	0.25	oil fly ash and boiler dust	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 05	Yes	5.15	pickling acids	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 06	Yes	1.21	acids not otherwise specified	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 07	Yes	2.03	pickling bases	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 09	Yes	9.23	sludges and filter cakes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 09	Yes	102.11	sludges and filter cakes containing dangerous substances	D1	M	Weighed	Abroad	Remondis Industrie Service GmbH,E36236037	SAD Knapsack,Tonstrabe 2,50374 Erftstadt,Germany,Germany	Remondis Industriel Service GmbH,E36236037,SAD Knapsack,Tonstrabe 2,50374 Erftstadt,Germany,Germany	SAD Knapsack,Tonstrabe 2,50374 Erftstadt,Germany,Germany
To Other Countries	11 01 09	Yes	22.84	sludges and filter cakes containing dangerous substances	R4	M	Weighed	Abroad	WRC World Resources Company GmbH,SL83A0032	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany	WRC World Resources Company GmbH,SL83A0032,Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany	Industriestrasse 7 ,04808 Wurzen ,Germany,Germany,Germany
To Other Countries	11 01 10	No	108.12	sludges and filter cakes other than those mentioned in 11 01 09	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	11 01 10	No	76.61	sludges and filter cakes other than those mentioned in 11 01 09	R1	M	Weighed	Offsite in Ireland	ERAS ECO (Ormonde Organics),W0211-01	Foxhole,Youghal,Youghal,Cork,Ireland		

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						M/C/E	Method Used					
To Other Countries	11 01 11	Yes	6.89	aqueous rinsing liquids containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	11 01 98	Yes	6.82	other wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 04	No	6.22	non-ferrous metal dust and particles	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 05	No	0.13	plastics shavings and turnings	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 07	Yes	0.08	mineral-based machining oils free of halogens (except emulsions and solutions)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 09	Yes	12.45	machining emulsions and solutions free of halogens	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 14	Yes	4.32	machining sludges containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 16	Yes	85.46	waste blasting material containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	12 01 17	No	3.2	waste blasting material other than those mentioned in 12 01 16	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	12 01 21	No	3.57	spent grinding bodies and grinding materials other than those mentioned in 12 01 20	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
Within the Country	13 01 10	Yes	0.01	mineral-based non-chlorinated hydraulic oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
Within the Country	13 01 11	Yes	0.0	synthetic hydraulic oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	13 01 11	Yes	0.45	synthetic hydraulic oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	13 01 13	Yes	5.52	other hydraulic oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland

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						M/C/E	Method Used					
To Other Countries	13 01 13	Yes	16.02	other hydraulic oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	13 01 13	Yes	0.21	other hydraulic oils	R2	M	Weighed	Offsite in Ireland	SRCL,W0055-02	Units 420 - 430 Beech Road,Western Industrial Estate,NAAS Road,Dublin 12,Ireland	Recyfuel ,D3200/61080/RGPED/2008/2/AP,Zoning Industriel d'Ethein,4480 ENGIS,Belgium,Belgium,Belgium	Zoning Industriel d'Ethein,4480 ENGIS,Belgium,Belgium,Belgium
Within the Country	13 02 06	Yes	0.02	synthetic engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	13 02 06	Yes	0.15	synthetic engine, gear and lubricating oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	13 02 08	Yes	29.15	other engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	13 02 08	Yes	55.89	other engine, gear and lubricating oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	13 03 08	Yes	4.66	synthetic insulating and heat transmission oils	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	13 03 07	Yes	2.04	mineral-based non-chlorinated insulating and heat transmission oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
Within the Country	13 05 07	Yes	0.05	oily water from oil/water separators	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	13 05 07	Yes	0.29	oily water from oil/water separators	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	13 07 01	Yes	5.45	fuel oil and diesel	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	13 07 03	Yes	1.37	other fuels (including mixtures)	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	13 08 02	Yes	1.11	other emulsions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	14 06 03	Yes	10.49	other solvents and solvent mixtures	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,.,.,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,.,.,Belgium	No 49 B-7181 ,Seneffe ,.,.,Belgium
To Other Countries	14 06 03	Yes	3.16	other solvents and solvent mixtures	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	15 01 10	Yes	148.74	packaging containing residues of or contaminated by dangerous substances	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
To Other Countries	15 01 10	Yes	46.72	packaging containing residues of or contaminated by dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	15 01 10	Yes	3.95	packaging containing residues of or contaminated by dangerous substances	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	MSM Recycling Ltd,W079-01,41 Cookstown Industrial Estate,Tallaght,Dublin 24,.,Ireland	41 Cookstown Industrial Estate,Tallaght,Dublin 24,.,Ireland
Within the Country	15 02 02	Yes	1.01	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	15 02 02	Yes	2.95	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R4	M	Weighed	Abroad	Heraeus ,IV/HU43.3-0682/12-Gen28/02	Heraeusstrasse 12-14 ,63450 Hanau ,.,.,Germany	Heraeus ,IV/HU43.3-0682/12-Gen28/02,Heraeusstrasse 12-14 ,63450 Hanau ,.,.,Germany	Heraeusstrasse 12-14 ,63450 Hanau ,.,.,Germany
To Other Countries	15 02 02	Yes	190.99	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	15 02 02	Yes	5.56	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
To Other Countries	15 02 03	No	32.46	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	16 01 14	Yes	0.06	antifreeze fluids containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 01 15	No	0.17	antifreeze fluids other than those mentioned in 16 01 14	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	16 02 13	Yes	1.08	discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metal Recycling Ltd. ,W113-03,Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland
To Other Countries	16 03 05	Yes	38.41	organic wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 03 04	No	0.06	inorganic wastes other than those mentioned in 16 03 03	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	16 03 06	No	0.27	organic wastes other than those mentioned in 16 03 05	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	16 05 04	Yes	1.62	gases in pressure containers (including halons) containing dangerous substances	R4	M	Weighed	Abroad	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Remondis (formerly SBH) ,11HRO03003 ,Austrabe 5 ,D74238 ,Krautheim ,.,Germany	Austrabe 5 ,D74238 ,Krautheim ,.,Germany
To Other Countries	16 05 06	Yes	0.44	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
Within the Country	16 05 06	Yes	0.04	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R3	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	16 05 06	Yes	24.67	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,.,.,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,.,.,Belgium	No 49 B-7181 ,Seneffe ,.,.,Belgium
To Other Countries	16 05 06	Yes	217.16	laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 05 07	Yes	16.35	discarded inorganic chemicals consisting of or containing dangerous substances	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	16 05 07	Yes	1.03	discarded inorganic chemicals consisting of or containing dangerous substances	R2	M	Weighed	Offsite in Ireland	SRCL,W0055-02	Units 420 - 430 Beech Road,Western Industrial Estate,NAAS Road,Dublin 12,Ireland	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 05 08	Yes	0.86	discarded organic chemicals consisting of or containing dangerous substances	R1	M	Weighed	Abroad	Geocycle S.A. ,38.152/BP	No. 49 B-7181 ,Seneffe ,.,.,Belgium	Geocycle S.A. ,38.152/BP,No 49 B-7181 ,Seneffe ,.,.,Belgium	No 49 B-7181 ,Seneffe ,.,.,Belgium
To Other Countries	16 05 08	Yes	61.34	discarded organic chemicals consisting of or containing dangerous substances	R4	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 05 09	No	14.07	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	R4	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	16 06 01	Yes	0.03	lead batteries	R4	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
Within the Country	16 06 01	Yes	0.12	lead batteries	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland
Within the Country	16 06 05	No	0.06	other batteries and accumulators	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland		
To Other Countries	16 10 01	Yes	1.12	aqueous liquid wastes containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	16 09 01	Yes	0.01	permanganates, for example potassium permanganate	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	17 02 04	Yes	8.2	glass, plastic and wood containing or contaminated with dangerous substances	R12	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W0196-01	John F. Kennedy Industrial Estate,John F. Kennedy Road,NAAS Road,Dublin 12,Ireland	Reiling MS recycling GmbH & Co KG,E97897324,Weetfelder Strasse 36,59199 Bonen,.,.,Germany	Weetfelder Strasse 36,59199 Bonen,.,.,Germany
Within the Country	17 05 03	Yes	6.13	soil and stones containing dangerous substances	R5	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Hinch Plant Hire,WFP-LS-09-0002-01,Straboe,.,Portlaoise,Co. Laois,Ireland	Straboe,.,Portlaoise,Co. Laois,Ireland
To Other Countries	18 01 07	No	0.33	chemicals other than those mentioned in 18 01 06	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	18 01 10	Yes	2.24	amalgam waste from dental care	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	19 02 06	No	1830.24	sludges from physico/chemical treatment other than those mentioned in 19 02 05	D5	M	Weighed	Offsite in Ireland	Bord na Mona Energy Limited,W0201-03	Drehid Waste Management Facility,Killinagh Upper,Carbury,Co. Kildare,Ireland		
Within the Country	19 03 05	No		stabilised wastes other than those mentioned in 19 03 04	D5	M	Weighed	Offsite in Ireland	Gortadroma Landfill,W0017-04	Gortadroma ,Ballyhahill ,Limerick,0,Ireland		
Within the Country	19 09 04	No	22.63	spent activated carbon	R1	M	Weighed	Offsite in Ireland	ERAS ECO (Ormonde Organics),W0211-01	Foxhole,Youghal,Youghal,Cork,Ireland		
To Other Countries	19 09 05	No	8.98	saturated or spent ion exchange resins	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	19 11 06	No	16.98	sludges from on-site effluent treatment other than those mentioned in 19 11 05	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
To Other Countries	20 01 14	Yes	0.04	acids	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 15	Yes	0.11	alkalines	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 19	Yes	6.18	pesticides	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	20 01 21	Yes	0.2	fluorescent tubes and other mercury-containing waste	R4	M	Weighed	Offsite in Ireland	Irish Lamp Co Ltd,WFP-DC-08-0348-01	Woodstock Industrial Estate,Kilkenny Road,Athy,Co. Kildare,Ireland	Irish Lamp Co. Ltd,WFP-DC-08-0348-01,Woodstock Industrial Estate,Kilkenny Road,Athy,Co. Kildare,Ireland	Woodstock Industrial Estate,Kilkenny Road,Athy,Co. Kildare,Ireland
Within the Country	20 01 21	Yes	0.01	fluorescent tubes and other mercury-containing waste	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland
To Other Countries	20 01 25	No	1.26	edible oil and fat	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	20 01 27	Yes	21.34	paint, inks, adhesives and resins containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	20 01 28	No	0.13	paint, inks, adhesives and resins other than those mentioned in 20 01 27	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	20 01 29	Yes	4.7	detergents containing dangerous substances	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
Within the Country	20 01 33	Yes	1.78	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland
Within the Country	20 01 35	Yes	1.03	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and and 20 01 23 containing hazardous components	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metal Recycling Ltd. ,W113-03,Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co. Offaly ,Ireland
Within the Country	20 01 29	Yes	0.02	detergents containing dangerous substances	R4	M	Weighed	Offsite in Ireland	KMK Metal Recycling ,W113-03	Cappincur Industrial Estate ,Daingean Road ,Tullamore ,Co Offaly ,Ireland	KMK Metals Recycling,W113-03,Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland	Cappincur Industrial Estate,Daingean Road,Tullamore,Co. Offaly,Ireland

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	20 01 35	Yes	182.12	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and and 20 01 23 containing hazardous components	R3	M	Weighed	Offsite in Ireland	Wheeley Environmental Refuse Services ,WFP-G-09-0002-01	Weir Road Business Park ,Weir Road ,Tuam ,Galway ,Ireland	Wheeley Environmental Refuse service,WFP-G-09-0002-01,weir road business park,weir road,tuam,galway,Ireland	weir road business park,weir road ,tuam,galway,Ireland
To Other Countries	06 05 02	Yes	0.85	sludges from on-site effluent treatment containing dangerous solutions	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 01 03	Yes	1.01	organic halogenated solvents, washing liquids and mother liquors	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 01 10	Yes	1.63	other filter cakes and spent absorbents	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 04 01	Yes	0.01	aqueous washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	07 06 01	Yes	9.64	aqueous washing liquids and mother liquors	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	13 02 04	Yes	0.02	mineral-based chlorinated engine, gear and lubricating oils	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Lindenschmidt KG ,471498089,Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen,Germany
To Other Countries	15 01 02	No	0.6	plastic packaging	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	16 10 02	No	133.96	aqueous liquid wastes other than those mentioned in 16 10 01	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	18 01 09	No	0.15	medicines other than those mentioned in 18 01 08	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	19 09 04	No	2.61	spent activated carbon	R12	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	20 01 30	No	0.39	detergents other than those mentioned in 20 01 29	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		
To Other Countries	20 01 31	Yes	12.63	cytotoxic and cytostatic medicines	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium	Zoning Industrial D ehein,B 4480 - Engis,,,,Belgium
To Other Countries	20 01 32	No	0.01	medicines other than those mentioned in 20 01 31	R1	M	Weighed	Abroad	Lindenschmidt KG,471498089	Krombacher Str. 42-46 ,Kreuztal ,Krombach ,Westfalen ,Germany		

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the Country	13 02 04	Yes	0.05	mineral-based chlorinated engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
Within the Country	**20 01 25**	**No**	0.25	edible oil and fat	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd ,W184-01	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland		
Within the Country	20 01 33	Yes	0.03	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	R9	M	Weighed	Offsite in Ireland	Enva Ireland Ltd. ,W184-01	Cloninam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Enva Ireland Ltd ,W184-01 ,Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland	Clonminam Industrial Estate ,Portlaoise ,Co. Laois ,.,Ireland
To Other Countries	06 02 04	Yes	0.03	sodium and potassium hydroxide	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
To Other Countries	07 01 04	Yes	0.03	other organic solvents, washing liquids and mother liquors	R1	M	Weighed	Abroad	Recyfuel SA,D3200/61080/RGPED2008/2/AP- PU	Zoning Industrial D Ehein,B-4480 Engis,.,.,Belgium	Recyfuel SA,D3200/61080/RGPED2008/2/AP-PU,Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium	Zoning Industrial D ehein,B 4480 - Engis,.,.,Belgium
To Other Countries	07 05 01	Yes	195.24	aqueous washing liquids and mother liquors	D10	M	Weighed	Abroad	Sava Gmbh,14HRO03002	ostertweute 1,25541 brunsbuttel,.,.,Germany	Sava Gmbh,14hro03002,ostertweute 1,25441 brunsbuttel,.,.,Germany	ostertweute 1,25441 brunsbuttel,.,.,Germany
To Other Countries	08 01 16	No	19.24	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15	D10	M	Weighed	Abroad	Sava Gmbh,14HRO03002	ostertweute 1,25541 brunsbuttel,.,.,Germany		
To Other Countries	16 05 08	Yes	0.02	discarded organic chemicals consisting of or containing dangerous substances	D15	M	Weighed	Abroad	Indaver Ireland,36-2	Tolka Quay Road,Dublin port,Dublin 1 ,n/a,Ireland	Chemogas NV,.,westvaardjik,85b,1850 grimbergen,.,Belgium	westvaardjik,85b,1850 grimbergen,.,Belgium
To Other Countries	06 01 01	Yes	44.99	sulphuric acid and sulphurous acid	R5	M	Weighed	Abroad	Sita Rekem,FR400388326100011	Sita Rekem establissement de roussilon,rue gaston montmousseau 38556 ,saint maurice l'exil,n/a,France	Sita Rekem,FR400388326100011,Rue Gaston Monmousseau,Roussillon,38556 Saint Maurice ,L'exil Cedex,France	Rue Gaston Monmousseau,Roussillon,38556 Saint Maurice ,L'exil Cedex,France
To Other Countries	06 01 06	Yes	7.72	other acids	R5	M	Weighed	Abroad	Sita Rekem,FR400388326100011	Sita Rekem establissement de roussilon,rue gaston montmousseau 38556 ,saint maurice l'exil,n/a,France	Sita Rekem,FR400388326100011,Rue Gaston Monmousseau,Roussillon,38556 Saint Maurice ,L'exil Cedex,France	Rue Gaston Monmousseau,Roussillon,38556 Saint Maurice ,L'exil Cedex,France

* Select a row by double-clicking the Description of Waste then click the delete button

Link to previous years waste data
Link to previous years waste summary data & percentage change
Link to Waste Guidance

Wheeley Environmental Refus weir road business park,weir r

oad ,tuam,galway,Ireland

Air I Noise I Water I Soil I Environmental Consultancy
www.axisenv.ie

Unit 5 Caherdavin Business Centre,
Ennis Road,
Limerick

ENVA

Shannon Environmental Services Limited,
Smithstown Industrial Estate,
Shannon, Co. Clare.

Annual Environmental Noise Report
Noise Survey 2015

Licence Number: W0041-01

Report Reference Number:	**3790-15-02**
Version:	**1**
Date of Issue:	**04-01-2016**
Report Compiled by:	**David Noonan**

Report Content

Report Date	04th Jan 2016	**Site Contact:**	JP O'Keefe
Report Issued By	Mark Mc Garry	**Version No:**	1
Signed:		**Client:**	ENVA
Notes:			

1.0 Executive Summary

ENVA (Shannon Environmental Services) is required as part of licence W0041-01; Conditions 7 and schedule F to carry out a noise survey of the installation on an annual basis. AXIS environmental services were commissioned to complete the survey after proposal acknowledgment and acceptance by ENVA's Environmental Department.

The purpose of the survey was to monitor noise at predetermined locations and assess the sites compliance against license conditions.

The survey was carried out in strict accordance with the standard ISO 1996 Parts 1 – 3, Acoustics – description, measurement and assessment of environmental noise. Reference was also made to the EPA guidelines NG4 *"Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities"* April 2012, in conjunction with the frequently asked questions issued by the Agency in August 2012.

All operations at ENVA were running as normal throughout the survey. There was significant interference from traffic movements on the National road (N19) and local access routes in the industrial estate. There were other sources of noise at each individual location which are summarised in the report.

Five monitoring points were monitored for the noise survey. N1, N4, N5 & N6 are boundary monitoring points which are located within the confines of the site and are in close proximity to all activities in operation. N8 was located outside the boundary of the site close to other industries within Smithstown Industrial Estate.

There was no tonal or impulsive noise observed at any of the locations for the duration of the assessment.

2.0 Introduction

As part of compliance monitoring at ENVA (Shannon Environmental Services) Limited, an annual noise survey is to be carried out in the vicinity of the plant. The purpose of the survey was to monitor day time noise at five predetermined locations to assess the sites compliance against licence conditions. The Agency and ENVA have agreed the monitoring points chosen to meet the requirements of the licence.

The IPPC licence W0041-01 outlines ENVA's requirements under Conditions 7 and Schedule F, which have been documented as follows:

2.1 Condition 7.3:

The licensee shall ensure that the activates shall be carried out in a manner such that emissions, noise or odours do not result in significant impairment of, or significant interference with, amenities or the environment beyond the facility boundary. There shall be no clearly audible tonal or impulsive component in the noise emission from the facility at the facility boundary.

Table 1: Schedule F: Noise Monitoring

Location	***Measurement***	***Frequency***
N1	30 minute Day survey to include 1/3rd octave measurements	Annually
N4	30 minute Day survey to include 1/3rd octave measurements	Annually
N5	30 minute Day survey to include 1/3rd octave measurements	Annually
N6	30 minute Day survey to include 1/3rd octave measurements	Annually
N8	30 minute Day survey to include 1/3rd octave measurements	Annually

3.0 Methods

Monitoring was carried out in strict accordance with ISO 1996 Parts 1 – 3, Description and Measurement of Environmental Noise. Reference was also made to the EPA guidelines NG4 *"Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities"*April 2012, in conjunction with the frequently asked questions issued by the Agency in August 2012.

Table 2: NG4 Noise Survey Recommendations

Period	Minimum Survey Duration outlined in NG4	Amended Requirements by the Agency in NG4 FAQ Version 2	EPA FAQ Information
Daytime (07:00 – 17:00)	4 hour survey with a minimum of 3 sampling periods at each noise monitoring location.	A minimum of 3 sampling periods at each noise monitoring location.	Sample periods relate to the time set in the licence i.e. 15 or 30 minutes per point.
Evening (17:00 – 23:00)	2 hour survey with a minimum of 1 sampling period at each noise monitoring location.	A minimum of 1 sampling period at each noise monitoring location.	This is only a requirement for new or revised licenses where the requirement is specified.
Night time (23:00 – 07:00)	3 hour survey with a minimum of 2 sampling periods at each noise monitoring location.	A minimum of 2 sampling periods at each noise monitoring location.	Sample periods relate to the time set in the licence i.e. 15 or 30 minutes per point.

Table 3: Equipment Details

	Meter No 2	Meter No 3
Manufacturer	Cirrus Optimus Green	Cirrus Optimus Green
Model	CR:171B	CR:172B
Serial Number	G061082	G061817
Firmware	V2.3.1156	V2.4.1529
Calibrator	CR:515 Acoustic Calibrator	CR:515 Acoustic Calibrator
Microphone	B&K4180 - 1893453	B&K4180 - 1893453
Windshield Type	UA:237 90mm Foam Windshield	UA:237 90mm Foam Windshield
Calibration Date		
Noise Meter	07th April 2015 – 2016	09th October 2015 - 2016
Certificate Number	S6450	232526
Calibrator	April 2015 – 2016	October 2015 - 2016
Certificate Number	S6388	227467

4.0 Monitoring Locations

4.1 N1 Day Time Survey

Noise monitoring point, N1, was located at the rear entrance of the site close to the Drum Handling Area and Sludge Process Building. The main source of noise during the survey was the regular drilling noises from the Drum Handling Area.

There were several other sources of noise noted during the survey, including Banging sounds from neighbouring site, low humming noise from pump at Sludge process building, birds chirping from nearby vegetation, onsite traffic movements (trucks and forklifts) and personnel chatting nearby the noise meter.

4.2 N4 Day Time Survey

This monitoring location is situated on the South Western boundary of the site close to the Sludge process building and the UV process building. The main source of noise at this location is the humming noise from a pump located at the UV Process building.

Other sources of noise recorded at this monitoring point include onsite traffic movements (trucks & forklifts), an occasional alarm going off in the distance, traffic movements from the main road (N19) & local access roads in the industrial estate and banging noises emanating from the Drum Handling area on site.

4.3 N5 Day Time Survey

Noise monitoring point, N5, was located on the western boundary of the site close to a series of bunded areas. There were several sources of noise recorded at this location, including a radio playing in neighbouring facility, traffic movements from the main road (N19) & access roads in the industrial estate, low humming noise is audible from sludge process building, onsite traffic movements (trucks and forklifts) and birds chirping in nearby vegetation.

4.4 N6 Day Time Survey

This noise monitoring point is located on the Southern boundary of the site, close to the main entrance, car park and offices building. The greatest source of noise at this location was vehicles entering and exiting the site, passing near to the noise meter.

Several other sources of noise were recorded at this location, including traffic movements from the main road (N19) & access roads in the industrial estate, onsite traffic movements of trucks & forklifts, birds chirping in nearby vegetation and traffic movements in neighbouring facilities.

4.5 N8 Day Time Survey

The final noise monitoring point surveyed, N8, was located off site in a car park near to the rear gate of the ENVA site. The greatest source of noise at this location was a truck pulling up close to the noise meter (approximately 5 metres) and remaining there with the engine running for approximately 5 minutes.

Other sources of noise noted are as follows; onsite traffic movements of trucks & forklifts, birds chirping in nearby vegetation, ENVA personnel chatting audibly near to rear gate of site, traffic movements both on the national road (N19) and throughout the industrial estate.

5.0 Summary of Daytime Noise Measurements

Noise Monitoring Location: N1 (Boundary Monitoring Location) 11-12-2015					
Period:	**Time**	**Measured Noise Levels (dB re. 2 x 10^{-5} Pa)**			**Comments**
		L_{Aeq}	**L_{AFMAX}**	**L_{A90}**	
Daytime:	10:05	60.3	90.9	47.9	The main source of noise during the survey was the regular drilling noises from the Drum Handling Area. There were several other sources of noise noted during the survey, including Banging sounds from neighbouring site, low humming noise from pump at Sludge process building, birds chirping from nearby vegetation, onsite traffic movements (trucks and forklifts) and personnel chatting nearby the noise meter.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		60.3	90.9	47.9	
Daytime Criterion, dB $L_{Ar,T}$:		-	-	**-**	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB $L_{Ar,T}$:		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	**-**	
Night time Criterion, dB $L_{Ar,T}$:		-	-	**-**	

Weather Conditions:			
	Daytime:	**Evening:**	**Night Time:**
Temperature (^{o}C)	7	-	-
Wind Speed (m/s)	3	-	-
Wind Direction:	From the West	-	-
Precipitation (mm):	0.0mm	-	-

Tonal Noise Assessment			
Daytime:	Run 1: None	-	-
Evening:	-	-	-
Night Time:	Run 1: None	-	-

Compliance Status – this is not a noise sensitive location therefore limits would not apply

Noise Monitoring Location: N4 (Boundary Monitoring Location) 11-12-2015					
Period:	**Time**	**Measured Noise Levels (dB re. 2 x 10^{-5} Pa)**			**Comments**
		L_{Aeq}	**L_{AFMAX}**	**L_{A90}**	
Daytime:	10:42	60.9	86.4	59.2	The main source of noise at this location is the humming noise from a pump located at the UV Process building. Other sources of noise recorded at this monitoring point include onsite traffic movements (trucks & forklifts), an occasional alarm going off in the distance, traffic movements from the main road (N19) & local access roads in the industrial estate and banging noises emanating from the Drum Handling area on site.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		60.9	86.4	59.2	
Daytime Criterion, dB $L_{Ar,T}$:		-	-	**-**	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB $L_{Ar,T}$:		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	**-**	
Night time Criterion, dB $L_{Ar,T}$:		-	-	**-**	

Weather Conditions:			
	Daytime:	**Evening:**	**Night Time:**
Temperature (^{o}C)	7	-	-
Wind Speed (m/s)	3	-	-
Wind Direction:	From the West	-	-
Precipitation (mm):	0.0mm	-	-

Tonal Noise Assessment			
Daytime:	Run 1: None	-	-
Evening:	-	-	-
Night Time:	Run 1: None	-	-

Compliance Status – this is not a noise sensitive location therefore limits would not apply

Noise Monitoring Location: N5 (Boundary Monitoring Location) 11-12-2015					
Period:	**Time**	**Measured Noise Levels (dB re. 2 x 10^{-5} Pa)**			**Comments**
		L_{Aeq}	**L_{AFMAX}**	**L_{A90}**	
Daytime:	10:13	57	81.3	48.8	There were several sources of noise recorded at this location, including a radio playing in neighbouring facility, traffic movements from the main road (N19) & access roads in the industrial estate, low humming noise is audible from sludge process building, onsite traffic movements (trucks and forklifts) and birds chirping in nearby vegetation.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		57	81.3	48.8	
Daytime Criterion, dB $L_{Ar,T}$:		-	-	**-**	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB $L_{Ar,T}$:		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	**-**	
Night time Criterion, dB $L_{Ar,T}$:		-	-	**-**	

Weather Conditions:			
	Daytime:	**Evening:**	**Night Time:**
Temperature (^{O}C)	7	-	-
Wind Speed (m/s)	3	-	-
Wind Direction:	From the West	-	-
Precipitation (mm):	0.0mm	-	-

Tonal Noise Assessment			
Daytime:	Run 1: None	-	-
Evening:	-	-	-
Night Time:	Run 1: None	-	-

Compliance Status – this is not a noise sensitive location therefore limits would not apply

Noise Monitoring Location: N6 (Boundary Monitoring Location) 11-12-2015					
Period:	**Time**	**Measured Noise Levels (dB re. 2 x 10^{-5} Pa)**			**Comments**
		L_{Aeq}	**L_{AFMAX}**	**L_{A90}**	
Daytime:	10:50	55.8	75.4	50.4	The greatest source of noise at this location was vehicles entering and exiting the site, passing near to the noise meter. Several other sources of noise were recorded at this location, including traffic movements from the main road (N19) & access roads in the industrial estate, onsite traffic movements of trucks & forklifts, birds chirping in nearby vegetation and traffic movements in neighbouring facilities.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		55.8	75.4	50.4	
Daytime Criterion, dB $L_{Ar,T}$:		-	-	**-**	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB $L_{Ar,T}$:		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	**-**	
Night time Criterion, dB $L_{Ar,T}$:		-	-	**-**	

Weather Conditions:			
	Daytime:	**Evening:**	**Night Time:**
Temperature (^{O}C)	7	-	-
Wind Speed (m/s)	3	-	-
Wind Direction:	From the West	-	-
Precipitation (mm):	0.0mm	-	-

Tonal Noise Assessment			
Daytime:	Run 1: None	-	-
Evening:	-	-	-
Night Time:	Run 1: None	-	-

Compliance Status – this is not a noise sensitive location therefore limits would not apply

Noise Monitoring Location: N8 (Off Site Monitoring Location) 11-12-2015					
Period:	**Time**	**Measured Noise Levels (dB re. 2 x 10^{-5} Pa)**			**Comments**
		L_{Aeq}	**L_{AFMAX}**	**L_{A90}**	
Daytime:	11:26	57.1	83.5	49.6	The greatest source of noise at this location was a truck pulling up close to the noise meter (approximately 5 metres) and remaining there with the engine running for approximately 5 minutes. Other sources of noise noted are as follows; onsite traffic movements of trucks & forklifts, birds chirping in nearby vegetation, ENVA personnel chatting audibly near to rear gate of site, traffic movements both on the national road (N19) and throughout the industrial estate.
	-	-	-	-	
	-	-	-	-	
Arithmetic Average (dB):		57.1	83.5	49.6	
Daytime Criterion, dB $L_{Ar,T}$:		-	-	**-**	
Evening:	-	-	-	-	This site is not required to monitor noise emissions during the evening period. The site is not defined as a new or revised licence since the guidelines were issued in 2012.
Arithmetic Average (dB):		-	-	-	
Evening Criterion, dB $L_{Ar,T}$:		-	-	-	
Night Time:	-	-	-	-	Not applicable
	-	-	-	-	
Arithmetic Average (dB):		-	-	**-**	
Night time Criterion, dB $L_{Ar,T}$:		-	-	**-**	

Weather Conditions:			
	Daytime:	**Evening:**	**Night Time:**
Temperature (^{O}C)	7	-	-
Wind Speed (m/s)	3	-	-
Wind Direction:	From the West	-	-
Precipitation (mm):	0.0mm	-	-

Tonal Noise Assessment			
Daytime:	Run 1: None	-	-
Evening:	-	-	-
Night Time:	Run 1: None	-	-

Compliance Status – this is not a noise sensitive location therefore limits would not apply

6.0 Conclusions

Five locations were monitored for broadband and 1/3rd Octave frequency as part of this annual environmental noise survey at ENVA (Shannon Environmental Services) Limited.

Each point was monitored for 30 minute periods during the Daytime survey.

None of the noise monitoring points surveyed are defined as noise sensitive locations, therefore compliance limits do not apply to any of them.

The site has not been issued noise limits but a requirement to ensure that noise from the site does not become a nuisance. The findings of the survey would indicate that the noise from the site was not creating a nuisance on the day.

There was no tonal noise determined at any monitoring location; therefore there are no requirements to apply penalties to the broadband measurement.

Appendix I Graphical Display of Raw Data

Tonal Noise:

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one third octave bands:

· 15dB in low frequency one third octave bands (25Hz to 125Hz);
· 8dB in middle frequency bands (160Hz to 400Hz), and;
· 5dB in high frequency bands (500Hz to 10,000Hz)

This is the definition outlined by the EPA in the guidance note issued in 2012: NG4.

04/01/2016

Cirrus Research plc

Measurement Summary Report

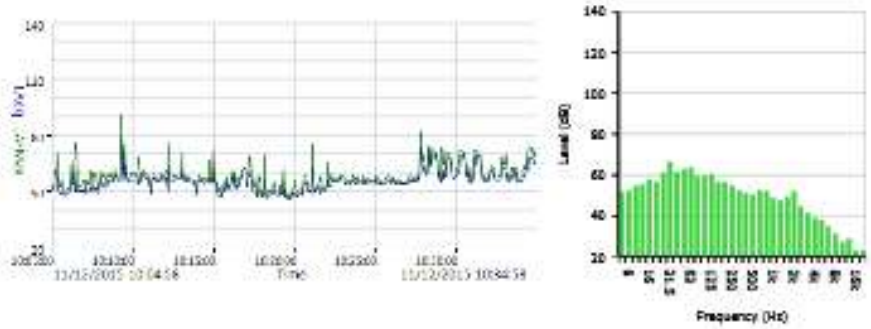
Name	N1			
Time	11/12/2015 10:04:58	**Person**	**Place**	**Project**
Duration	00:30:00	David Noonan	ENVA	Environmetal Noise
Instrument	G061082, CR:171B			

Calibration

Before 11/12/2015 10:04 Offset -2.75 dB **After** 11/12/2015 11:11 Offset -4.49 dB

Basic Values	
LAeq	60.3 dB
LAE	92.9 dB
LAFMax	90.9 dB

Statistical Levels (Ln)	
LAF1	70.3 dB
LAF5	66.4 dB
LAF10	61.0 dB
LAF50	54.4 dB
LAF90	47.9 dB
LAF95	47.0 dB
LAF99	46.0 dB



ReportId

04/01/2016

Cirrus Research plc

Measurement Summary Report

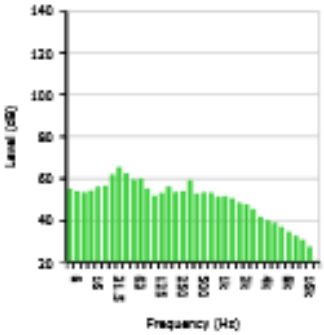
Name	N4			
Time	11/12/2015 10:41:07	**Person**	**Place**	**Project**
Duration	00:30:00	David Noonan	ENVA	Environmetal Noise
Instrument	G061082, CR:171B			

Calibration

Before 11/12/2015 10:04 Offset -2.75 dB **After** 11/12/2015 11:11 Offset -4.49 dB

Basic Values	
LAeq	60.9 dB
LAE	93.4 dB
LAFMax	86.4 dB

Statistical Levels (Ln)	
LAF1	63.8 dB
LAF5	62.6 dB
LAF10	62.3 dB
LAF50	59.8 dB
LAF90	59.2 dB
LAF95	59.1 dB
LAF99	58.9 dB



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04/01/2016

Cirrus Research plc

Measurement Summary Report

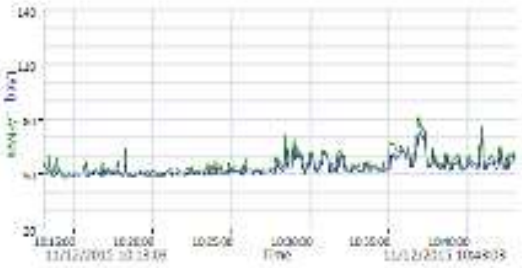
Name	NS			
Time	11/12/2015 10:13:03	**Person**	**Place**	**Project**
Duration	00:30:00	David Noonan	ENVA	Environmetal Noise
Instrument	G061817, CR:172B			

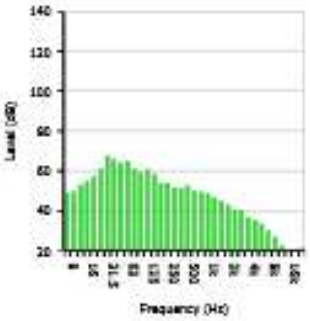
Calibration

Before 11/12/2015 10:10 **Offset** -0.07 dB **After** 11/12/2015 11:38 **Offset** -0.11 dB

Basic Values	
LAeq	57.0 dB
LAE	89.5 dB
LAFMax	81.3 dB

Statistical Levels (Ln)	
LAF1	69.1 dB
LAF5	61.1 dB
LAF10	58.5 dB
LAF50	51.1 dB
LAF90	48.8 dB
LAF95	48.4 dB
LAF99	47.8 dB





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04/01/2016

Cirrus Research plc

Measurement Summary Report

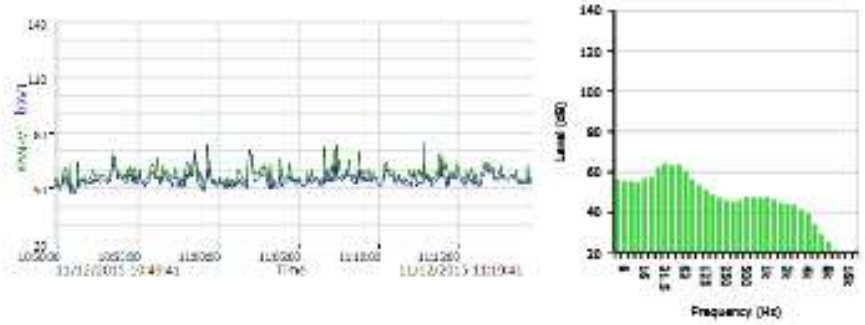
Name	N6			
Time	11/12/2015 10:49:41	**Person**	**Place**	**Project**
Duration	00:30:00	David Noonan	ENVA	Environmetal Noise
Instrument	G061817, CR:172B			

Calibration

Before 11/12/2015 10:10 Offset -0.07 dB **After** 11/12/2015 11:58 Offset -0.11 dB

Basic Values	
LAeq	55.8 dB
LAE	88.3 dB
LAFMax	75.4 dB

Statistical Levels (Ln)	
LAF1	66.7 dB
LAF5	59.4 dB
LAF10	57.4 dB
LAF50	53.2 dB
LAF90	50.4 dB
LAF95	49.4 dB
LAF99	47.2 dB



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04/01/2016

Cirrus Research plc

Measurement Summary Report

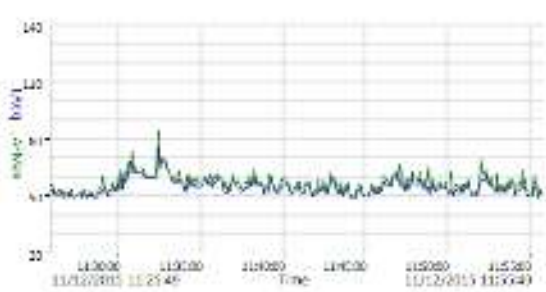
Name	NB			
Time	11/12/2015 11:25:49	**Person**	**Place**	**Project**
Duration	00:30:00	David Noonan	ENVA	Environmetal Noise
Instrument	G061817, CR:172B			

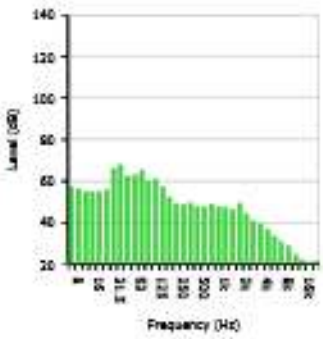
Calibration

Before 11/12/2015 10:10 **Offset** -0.07 dB **After** 11/12/2015 11:58 **Offset** -0.11 dB

Basic Values	
LAeq	57.1 dB
LAE	89.7 dB
LAFMax	83.5 dB

Statistical Levels (Ln)	
LAF1	67.0 dB
LAF5	61.4 dB
LAF10	59.3 dB
LAF50	53.2 dB
LAF90	49.6 dB
LAF95	49.1 dB
LAF99	48.4 dB





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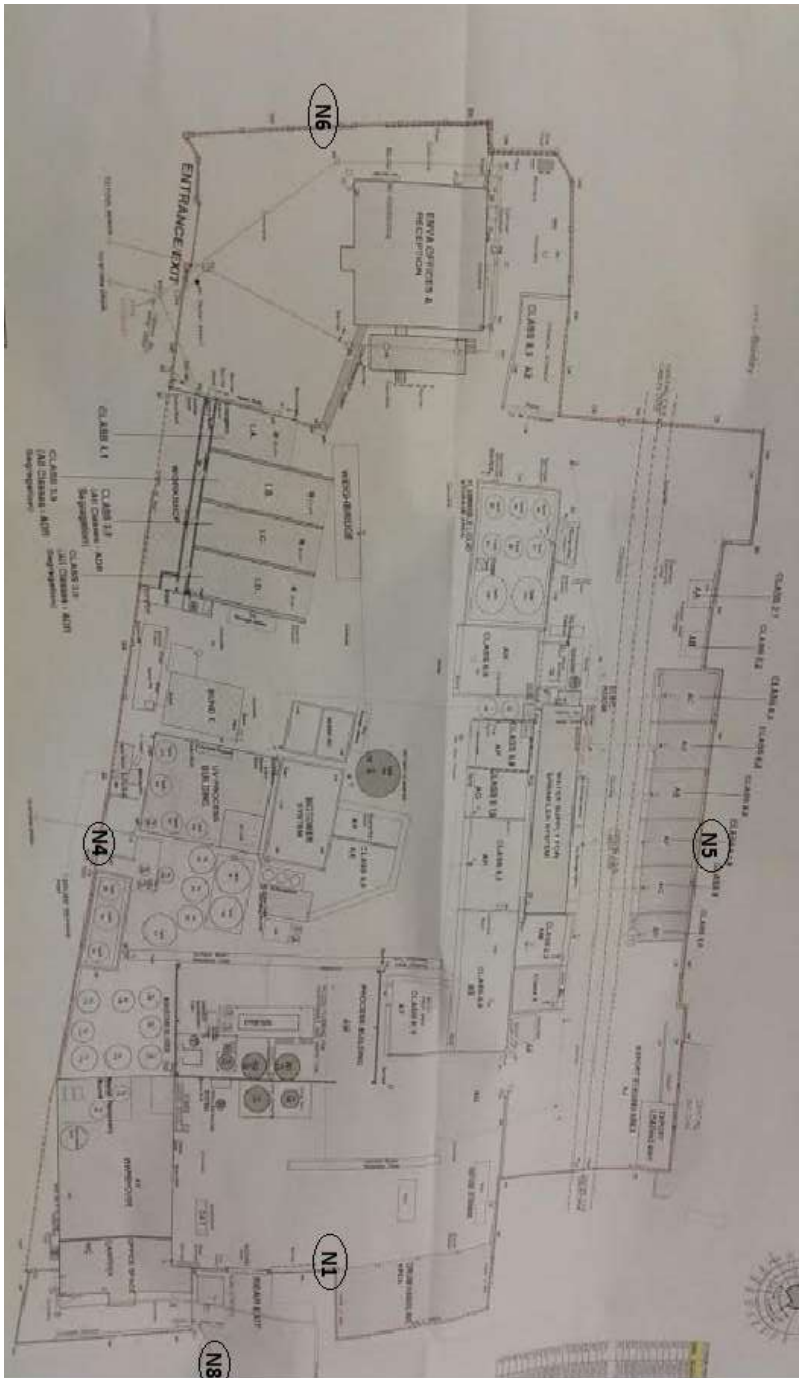
Appendix II Site Map



Appendix III Calibration Certificates

Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	CR:172B
Description	Sound Level Meter
Serial Number	G061817

Calibration Procedure

The instrument detailed above has been calibrated to the publish test and calibration data as detailed in the instrument hand book, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001,IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSI S1.4-1983, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.
Sound Level Meters: All Calibration procedures were carried out by subsituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards {A.0.6}. The standards are:

Microphone Type	B&K 4192	Serial Number	1920791	Calibration Ref.	S6450
Pistonphone Type	B&K 4220	Serial Number	613843	Calibration Ref.	S6388

Calibrated by T.A. Goodhil

Calibration Date 09 October 2015
Calibration Certificate Number 232526

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk

Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Certificate Number: **102905**
Date of Issue: **09 October 2015**

Acoustic Calibrator

Manufacturer: **Cirrus Research plc** Serial Number: **59318**
Model Number: **CR:515**

Calibration Procedure

The sound calibrator detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC 60942:2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer s data.

Date of Calibration: **09 October 2015**

Calibration Results

Measurement	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
1	94.02	1000.0	0.39
2	94.00	1000.0	0.38
3	94.00	1000.0	0.39
Average	**94.01**	**1000.0**	**0.39**
Uncertainty	± 0.13	± 0.1	± 0.10

The reported uncertainties of measurement are expanded by a coverage factor of k=2, providing a 95% confidence level.

Cirrus Research plc, Acoustic House, Bridlington Road Hunmanby, North Yorkshire, YO14 0PH, United Kingdom
Telephone: 0845 230 2434 **Int**: +44 1723 891655
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No. 987160

bsi. ISO 9001 Quality Management FM 531001 ISO 14001 Environmental Management EMS 552104

Environmental Conditions

Pressure:	**101.49 kPa**
Temperature:	**21.8 °C**
Humidity:	**48.1 %**

Evidence of Pattern Approval

The manufacturer's product information indicates that this model of sound calibrator has been formally pattern approved to IEC 60942:2003 Annex A to Class 1. This has been confirmed with the PhysikalischTechnische Bundesanstalt (PTB).

Statement of Calibration

As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the Class 1 requirements of IEC 60942:2003.

Calibration Laboratory

Laboratory:	Cirrus Research plc Acoustic House, Bridlington Road, Hunmanby North Yorkshire, YO14 0PH, United Kingdom
Test Engineer:	Mark Berry

M.BERRY

Page 2 of 2

Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Certificate Number: **102903**

Date of Issue: **09 October 2015**

Microphone Capsule

Manufacturer: **Cirrus Research plc** Serial Number: **203029A**

Model Number: **MK224**

Calibration Procedure

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using an electrostatic actuator in accordance with BS EN 61094-6:2005 with the free-field response derived via standard correction data traceable to the National Physical Laboratory, Middlesex, UK.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

Date of Calibration: **08 October 2015**

Open Circuit Sensitivity at 1 kHz: **43.2 mV/Pa** / **-27.3 dB rel 1 V/Pa**

Environmental Conditions

Pressure: **101.10 kPa**

Temperature: **21.0 °C**

Humidity: **38.0 %**

Calibration Laboratory

Laboratory: Cirrus Research plc
Acoustic House, Bridlington Road, Hunmanby
North Yorkshire, YO14 0PH, United Kingdom

Test Engineer: Debra Swalwell

Cirrus Research plc, Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH, United Kingdom
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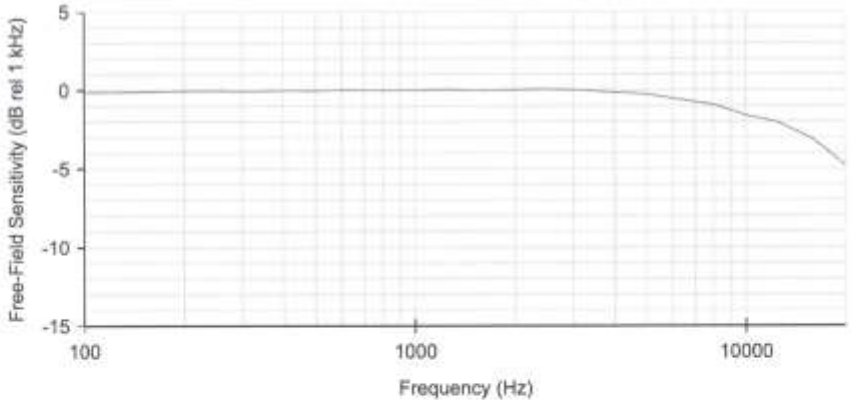
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No. 987160

bsi. ISO 9001 Quality Management FM 531001 ISO 14001 Environmental Management EMS 552104

Free-Field Frequency Response

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator to Free-Field Correction (dB)
100	-0.12	-2.10
125	-0.13	-1.41
160	-0.10	-0.88
200	-0.04	-0.52
250	-0.04	-0.33
315	-0.06	-0.25
400	-0.03	-0.12
500	-0.04	-0.08
630	0.02	0.01
800	-0.03	-0.05
1 000	0.00	-0.01
1 250	0.04	-0.04
1 600	-0.02	-0.21
2 000	0.03	-0.28
2 500	0.06	-0.45
3 150	0.00	-0.76
4 000	-0.14	-1.31
5 000	-0.26	-2.02
6 300	-0.61	-3.11
8 000	-0.94	-4.62
10 000	-1.62	-6.78
12 500	-2.07	-8.77
16 000	-3.16	-11.25
20 000	-4.75	-14.96



Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	CR:171B
Description	Sound Level Meter
Serial Number	G061082

Calibration Procedure

The instrument detailed above has been calibrated to the publish test and calibration data as detailed in the instrument hand book, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001,IEC 61260:1995, IEC 60942:1997, IEC 61252:1993, ANSI S1.4-1983, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.
Sound Level Meters: All Calibration procedures were carried out by substituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards (A.0.6). The standards are:

Microphone Type	B&K 4192	Serial Number	19207921	Calibration Ref.	56450
Pistonphone Type	B&K 4220	Serial Number	613843	Calibration Ref.	56388

Calibrated by T. A. Goodall

Calibration Date 07 April 2015
Calibration Certificate Number 227467

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk

Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer	Cirrus Research plc
Instrument Type	CR:511E
Description	Acoustic Calibrator
Serial Number	41373

Calibration Procedure

The acoustic calibrator detailed above has been calibrated to the published data as described in the operating manual. The procedures and techniques used to follow the recommendations of the IEC standard Electroacoustics – Sound Calibrators IEC 60942:2003, IEC 60942:1997, BS EN 60942:1998 and BS EN 60942:2003 where applicable.. The calibrator's main output is 94.00 dB (1 Pa) and this was set within the 0.01 dB resolution of the test system, i.e. one hundredth of a decibel. Numbers in {parenthesis} refer to the paragraph in IEC 60942.

Calibration Traceability

The calibrator above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards {A.0.6}. The standards are:

Microphone Type	B&K 4192	Serial Number	19207921	Calibration Ref.	S6450
Pistonphone Type	B&K 4220	Serial Number	613843	Calibration Ref.	S6388

Calibration Climate Conditions

The climatic test conditions were all maintained within the permitted limits of IEC 60942:1997.

Temperature	{B.3.2}	Permitted band 15°C to 25°C
Humidity	{B.3.2}	Permitted band 30% to 90% RH
Static Pressure	{B.3.2}	Permitted band 85 kPa to 105 kPa
Ambient Noise Level	{B.3.3.6}	Max permitted level 64 dB(Z)

Measurement Results

The figures below are the Calibration Laboratory test limits for this model calibrator and have a smaller tolerance than those permitted in IEC 60942.

94 dB Output	94.00 dB	Permitted band	93.95 to 94.05dB
104 dB Output	103.98 dB	Permitted band	103.80 to 104.30dB
Frequency	998.19 Hz	Permitted band	990 to 1010Hz

Uncertainty

With an uncertainty coefficient of k=2, i.e. a 95% confidence level, the uncertainty of each measure is

94 dB Output	± 0.13 dB	104 dB Output	± 0.14 dB
Frequency	± 0.1 Hz	Level Stability	± 0.04 dB

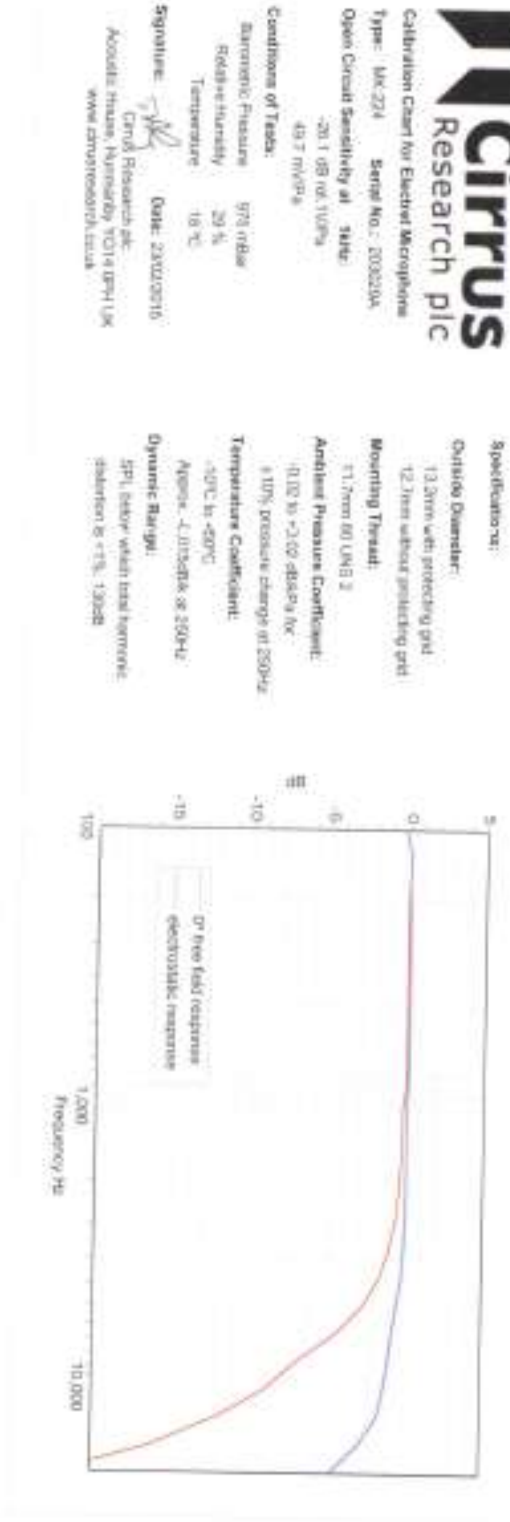
Calibrated by T. A. Goodall

Calibration Date 07 April 2015

Calibration Certificate Number 227465

This Calibration Certificate is valid for 12 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk



Cirrus Research plc

Calibration Chart for Electret Microphone

Type: MK:224 Serial No.: 203029A

Open Circuit Sensitivity at 1kHz:
-26.1 dB rel. 1V/Pa
49.7 mV/Pa

Conditions of Tests:
Barometric Pressure 975 mBar
Relative Humidity 29 %
Temperature 18 °C

Signature: Date: 23/02/2016

Cirrus Research plc
Acoustic House, Hunmanby YO14 0PH UK
www.cirrusresearch.co.uk

Specifications:

Outside Diameter:
13.2mm with protecting grid
12.7mm without protecting grid

Mounting Thread:
11.7mm 60 UNS 2

Ambient Pressure Coefficient:
-0.02 to +0.02 dB/kPa for
±10% pressure change at 250Hz

Temperature Coefficient:
-10°C to +50°C
Approx. -0.015dB/k at 250Hz

Dynamic Range:
SPL below which total harmonic
distortion is <1%: 130dB

Glossary of Terms

Note: Not all terms were used in the description of noise for this noise survey.

Ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
Acoustic shadow	An acoustic shadow is an area through which sound waves fail to propagate, due to topographical obstructions or disruption of the waves via phenomena such as wind currents.
Background noise	The steady existing noise level present without contribution from any intermittent sources. The A weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T (LAF90,T).
Broadband	Sounds that contain energy distributed across a wide range of frequencies.
Competent person	Individual possessing a combination of technical knowledge, experience and skills as outlined in Section 2.0 and who can demonstrate both practical and theoretical competence.
Criterion noise level	The long term mean value of the noise level that must not be exceeded. This is generally stipulated in the IPPC/Waste licence and it may be applied to a noise source, a boundary of the activity or to an NSL in the vicinity of the site.
dB	Decibel. The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro pascals (20 uPa).
Facade level	The noise level at a location 1m from the facade of a building is described by the term facade level, and is subject to a higher noise level than one in an open area (free-field conditions) due to reflection effects.
Free field	These are conditions in which the radiation from sound sources is unaffected by the presence of any reflecting boundaries or the source itself. In practice, it is a field in which the effects of the boundaries are negligible over the frequency range of interest. In environmental noise, true free-field measurement conditions are seldom achieved and generally the microphone will be positioned at a height between 1.2 and 1.5 metres above ground level. To minimise the influence of reflections, measurements are generally made at least 3.5 metres from any reflecting surface other than the ground.
Hertz (Hz)	The unit of sound frequency in cycles per second.
Impulsive	A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.
LAeq,T	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T).The closer the LAeq value is to either the LAF10 or LAF90 value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources, such as traffic, on the background.
LAFN	The A-weighted noise level exceeded for N% of the sampling internal. Measured using the "Fast" time weighting.
LAr,T	The Rated Noise Level, equal to the LAeq during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound.
LAF10	Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period. It is

	used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting.
LAF90	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level. Measured using the "Fast" time weighting.
LAFmax	The maximum **RMS** A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.
LAFmin	The minimum **RMS** A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.
Lden	Is the 24 hour noise rating level determined by the averaging of the Lday with the Levening plus a 5 dB penalty and the Lnight plus a 10 dB penalty.
Low background noise	An area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows: o Average Daytime Background Noise Level ≤40dB LAF90, and; o Average Evening Background Noise Level ≤35dB LAF90, and; o Average Night-time Background Noise Level ≤30dB LAF90.
Low frequency noise	LFN - noise which is dominated by frequency components towards the lower end of the frequency spectrum; see Appendix VI for a more detailed discussion.
LpA (dB)	An 'A-weighted decibel' K a measure of the overall level of soundacross the audible frequency range (20Hz – 20kHz) with A-frequency weighting (i.e. 'A–weighting') to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Noise	Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise.
Noise sensitive location	NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Octave band	A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards.
Rating level	See LAr,T.
RMS	The RMS (Root Mean Square) value of a set of numbers is the square root of the average of their squares.
SEL (LAX or LAE)	Sound exposure level **–** a measure of the A-weighted sound energy used to describe noise events such as the passing of a train or aircraft; it is the A-weighted sound pressure level if occurring over a period of 1 second, would contain the same amount of A-weighted sound energy as the event.
Sound pressure level	Sound pressure refers to the fluctuations in air pressure caused by the passage of a sound wave. It may be expressed in terms of sound pressure level at a point.

Specific noise level	A component of the ambient noise which can be specifically identified by acoustical means and may be associated with a specific source. In BS 4142, there is a more precise definition as follows: 'the equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval (LAeq, T)'.
Time weighting	One of the averaging times (Fast, Slow or Impulse) used for the measurement of RMS sound pressure level in sound level meters.
Tonal	Sounds which cover a range of only a few Hz which contains a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.
1/3 octave analysis	Frequency analysis of sound such that the frequency spectrum issubdivided into bands of one–third of an octave each.

Groundwater Monitoring Round 1 (March) 2015

22 April 2015

47092963/CKRP0001

Issue No. 1 Draft

Prepared for: Enva Ireland Limited

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Checked and Approved by	Kevin Forde		22/04/2015	Principal Hydrogeologist

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Limitations

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[1] On 16 March 2015 the name of URS Ireland Limited changed to AECOM Infrastructure & Environment Ireland Limited to reflect the company's status as a wholly owned subsidiary through which AECOM operates in Ireland.

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1. INTRODUCTION

1.1 Introduction

AECOM Infrastructure & Environment Ireland Limited (AECOM) is pleased to present this report to Enva Ireland Limited (Enva) for the Quarter 1 (Q1 - March) 2015 groundwater monitoring round conducted at the Enva Shannon Facility, Smithstown, Shannon, Co. Clare (the site). A site location plan is presented in Figure 1.

Works were completed in accordance with AECOM Proposal Number 3153102, 'Enva Shannon Groundwater Monitoring 2015', dated 11 March 2015.

Enva has a network of nine on-site groundwater monitoring wells and three off-site groundwater monitoring wells. The off-site wells are located to the southeast in a parking area. Enva also has access to two groundwater monitoring wells located on an adjacent site (Chemifloc) to the west. A site layout plan showing borehole locations is presented in Figure 2.

Under the terms of the site's Waste Licence (W0041-01), Enva are required to monitor the quality of groundwater in monitoring wells MW3, MW4S and MW5 at quarterly intervals for a range of organic and inorganic parameters.

The Q1 2015 groundwater monitoring was conducted on 31 March 2015.

2. SCOPE OF WORKS

The following scope of work was completed by an experienced AECOM field scientist on 31 March 2015:

- Water level measurement at all accessible monitoring wells, both on and off-site
- Well purging and measurement of water quality parameters at monitoring wells MW3, MW4S and MW5
- Groundwater sampling and analysis from monitoring wells MW3, MW4S and MW5 in accordance with Waste Licence monitoring requirements.

2.1 Water Level Measurement

Measurement of water levels was completed in all accessible on site monitoring wells (MW3, MW4S, MW4D, MW5, MW6, MW7, MW8, MW9 and MW10) and in monitoring wells located on the Chemifloc site (MW1 and MW2).

Water levels in wells located to the southeast in a parking area outside of the site boundary (MW11, MW12 and MW13) were also measured.

At each well, an interface probe was used to monitor depth to groundwater and to assess the presence of free phase product.

2.2 Well Purging and Water Quality Measurements

The volume of standing water in each of the three groundwater monitoring wells to be sampled was calculated based on measured water levels. A minimum of three times this volume was then purged from the wells.

Water quality measurements were taken toward the end of purging using a calibrated water quality field meter in a flow-through cell fitted to the sampling tubing. Pumping continued until stable field measurements were recorded. Field measurements included pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and oxidation-reduction potential (ORP) were recorded.

Monitoring wells MW3, MW4S and MW5 were purged and sampled using dedicated, in-situ, inertial lift pumping equipment to minimise volatilisation and loss of volatile organic compounds (VOCs).

2.3 Groundwater Sampling

Groundwater samples were analysed for the Waste Licence monitoring parameters, as detailed in Appendix A and Table 1.

Groundwater samples were collected into clean, laboratory-supplied sample containers. Samples were handled by field staff wearing single use, disposable nitrile gloves, which were changed between sampling locations to minimise cross-contamination.

Samples were labelled in the field and sample details were entered onto a chain of custody form. Whilst on-site and during transit, the groundwater samples were stored in a chilled cool box.

The samples were sent by overnight courier to Jones Environmental Laboratories U.K., an AECOM - approved laboratory.

3. RESULTS

3.1 Field Observations

During groundwater sampling on 31 March 2015, the following was noted:

- No floating or sinking free phase product was detected in any of the groundwater monitoring wells dipped
- Groundwater sampled from monitoring well MW3 was clear, with no evidence of contamination (such as sheen or odour)
- Groundwater sampled from monitoring well MW4S was observed to be clear with a possible solvent odour
- Groundwater from well MW5 was observed to be clear with a possible hydrocarbon odour

Field measurements of water quality parameters are tabulated in Table 2 and summarised below:

- pH readings were close to neutral (pH 7) ranging between 6.54 (MW3) and 7.16 (MW5) and were within the normal range for groundwater at the site
- Groundwater temperatures ranged from 10.8 ^{o}C (MW4S) to 12.8 ^{o}C (MW3). Temperature readings were generally within the typical range for groundwater in Ireland (10.0 ^{o}C to 12.0 ^{o}C)
- Electrical conductivity (EC) in monitoring well MW5 (726 µS/cm) was within the normal range for groundwater in Ireland (EPA Draft Interim Guideline Value (IGV) = 1,000 µS/cm and Groundwater Threshold Value (GTV) = 1,875 µS/cm). More elevated EC readings were recorded at wells MW4S (1,581 µS/cm) and MW3 (1,048 µS/cm). The EC value recorded at well MW4S in March 2015 was lower than in the previous monitoring round in December 2014 (3,693 µS/cm)
- Field ORP readings were compensated as recommended by the instrument manufacturer. The adjusted redox (Eh) readings ranged between 3 mV (MW5) and 132 mV (MW3) and indicate reducing (anaerobic) groundwater conditions.
- Dissolved oxygen concentrations in groundwater ranged between 1.44 mg/L (MW4S) and 3.56 mg/L (MW5). Groundwater conditions beneath the site can therefore be described as anaerobic (under saturated with respect to oxygen) and are consistent with the redox potential readings noted above. For comparison, fully aerated groundwater at the observed temperatures would be expected to have dissolved oxygen concentrations in the region of 10 mg/L

3.2 Groundwater Flow Direction

The direction of groundwater flow under natural gradient conditions is expected to follow the local topographic gradient towards the south and southeast, eventually discharging to the Shannon Estuary. However, abstraction from Enva's Production Well prevents groundwater from following the natural gradient, especially in the central part of the site.

Water levels were measured on 31 March 2015. It is not possible to measure the depth to water in the Enva Production Well located in the centre of the site (see Figure 2), as there is no access to the well.

Wellhead elevations and standing water level measurements in all other accessible wells were used to calculate water table elevations and infer a groundwater flow pattern, which is presented as Figure 3.

In March 2015, the general groundwater flow direction is inferred to be to the south and south-west. Groundwater flow in the central part of the site is towards the Enva Production Well (see Figure 3).

3.3 Data Assessment

3.3.1 Assessment Criteria

The required groundwater analysis is listed in Schedule F.3 of the Waste Licence and is presented in Appendix A. No Emission Limit Values are specified in the Licence for groundwater; therefore, assessment criteria were sourced from published guidance selected based on the site setting.

The nearest surface water feature to the site is an unnamed stream located approximately 100 m east of the site. This stream eventually flows into the Shannon Estuary, which is located approximately 2 km south of the site. The bedrock aquifer is classified by the Geological Survey of Ireland (GSI)[2] as a 'poor aquifer – bedrock which is generally unproductive except for local zones'. GSI records show that there are nine groundwater monitoring wells located on or in the vicinity of the site. GSI records indicate that there are no drinking water abstraction wells located in the vicinity of the site.

As such, general groundwater quality was assessed by comparing analytical results to the following guidelines:

- European Communities Environmental Objectives (Groundwater) Regulations, 2010. Statutory Instrument No. 9 of 2010 (GTVs)
- Environmental Protection Agency's Draft Interim Guidelines Values for the Protection of Groundwater, 2003 (IGVs).

3.3.2 Analytical Results

The validated laboratory report is presented in Appendix B. Groundwater analytical results are presented in Tables 3 to 7. A summary of analytical results is presented below.

Volatile Organic Contaminants (VOCs)

Concentrations of vinyl chloride (VC) above the adopted assessment criteria were recorded in groundwater sample MW3 (6 µg/L).

The groundwater sample collected from well MW4S contained concentrations of VC (412 µg/L), cis-1-2-dichloroethene (cDCE) (917 µg/L), chloroform (13 µg/L), benzene (5 µg/L) and toluene above the relevant assessment criteria.

Benzene (1 µg/L) and naphthalene (10 µg/L) concentrations above the adopted assessment criteria were reported in groundwater from monitoring well MW5.

Semi-Volatile Organic Contaminants (SVOCs)

2,4-dichlorophenol was detected at a concentration of 25 µg/L in groundwater from well MW4S in Q1 2015. The IGV for the sum of the phenol compounds is 0.5 µg/L.

In March 2015, two SVOCs were detected above MRLs in groundwater from well MW5; 2-methylnaphthalene (3 µg/L) and naphthalene (7 µg/L). The naphthalene result exceeds the draft IGV of 1 µg/L. There is no assessment criteria for 2-methylnaphthalene.

Hydrocarbons

Diesel range organics (DRO) (C_8 - C_{40}) were detected above the MRL in groundwater from wells MW4S and MW5 in March 2015 at concentrations of 240 µg/L and 1,480 µg/L, respectively.

Relatively low concentrations of GRO (C_4 – C_{12}) were detected in groundwater from well MW3 in March 2015. More elevated concentrations of GRO (C_4 - C_{12}) were reported in samples MW4S (688 µg/L) and MW5 (1,096 µg/L).

Total petroleum hydrocarbon concentrations in groundwater from all three groundwater wells exceeded the assessment criteria (IGV of 10 µg/L).

At well MW5, the TPH composition is different to that at well MW4S, being predominantly in the C_8 - C_{16} carbon chain length range. This detection may be related to anecdotally-reported historical issues with a former fuel storage tank on a third party site adjacent to MW5.

[2] www.gsi.ie

Ammonium as NH_4

In water, ammonia (NH_3) typically dissociates to form the ammonium ion (NH_4), particularly at pH values of less than 7. Reported concentrations of ammoniacal nitrogen (as NH_4) in samples MW3 (1 mg/L) and MW4S (12 mg/L) exceeded the adopted assessment criteria.

Chloride

Reported concentrations of chloride ranged between 65 mg/L (MW5) and 268 mg/L (MW4S). The concentration of chloride reported for sample MW4S exceeded the adopted assessment criteria.

Sulphate

Reported concentrations of sulphate ranged between 47 mg/L (MW5) and 285 mg/L (MW4S). The reported concentration of sulphate in sample MW4S exceeded the adopted assessment criteria.

Sodium

Reported concentrations of sodium ranged between 36 mg/L (MW5) and 194 mg/L (MW4S). The reported concentration of sodium in sample MW4S exceeded the adopted assessment criteria.

Potassium

Reported concentrations of potassium ranged between 3 mg/L (MW5) and 9 mg/L (MW4S). The reported concentrations of potassium in samples MW3 and MW4S exceeded the adopted assessment criteria.

Total Oxidised Nitrogen (TON)

Reported concentrations of TON ranged between 0.2 mg/L (MW3 and MW4S) and 0.6 mg/L (MW5). There is no appropriate assessment criterion available for TON.

Total Organic Carbon (TOC)

Reported concentrations of TOC ranged from 5 mg/L (MW3 and MW5) to 16 mg/L (MW4S). There is no appropriate assessment criterion available for TOC.

Cyclohexane Extractable Matter (CEM)

Concentrations of CEM ranged from below the MRL (<1 mg/L) (MW3) to 2,229 mg/L (MW4S). There is no appropriate assessment criterion available for CEM.

4. CONCLUSIONS

The findings of the Q1 (March) 2015 groundwater monitoring event are as follows:

- Groundwater contours indicate that groundwater, particularly in the central part of the site is influenced by pumping from the Enva Production Well
- The highest concentrations of VOCs were reported in the sample collected from monitoring well MW4S (total VOCs of 1,567 µg/L), which is located in the southern part of the site. The groundwater sample collected from well MW4S contained concentrations of VC (412 µg/L), cDCE (917 µg/L), chloroform (13 µg/L), benzene (5 µg/L) and toluene (13 µg/L), above the assessment criteria. The total VOC concentration at well MW4S decreased marginally between December 2014 and March 2015 from 1,684 µg/L to 1,567 µg/L. The total reported VOC concentration in Q1 2015 is the lowest on record (excluding February 2011 – when there was a possible lab error associated with the reported results)
- Low concentrations of VOCs (56 µg/L) were reported in the groundwater sample collected from monitoring well MW3 (located in the north west of the site).
- Total reported concentration of VOCs in the sample from MW5 (located in the south western part of the site) was 92 µg/L in March 2015, a slight increase from 31 µg/L in December 2014
- No SVOCs were detected in groundwater from well MW3
- 2-methylnaphthalene (3 µg/L) and naphthalene (7 µg/L) were detected in groundwater from well MW5. The reported concentration of naphthalene exceeded the draft IGV
- DRO and GRO were detected above MRLs in groundwater at all three wells monitored in March 2015. Reported TPH concentrations ranged between 45 µg/L (MW3) to 2,576 µg/L (MW5), with all three results exceeding the assessment criteria
- The total TPH concentration for well MW4S decreased from 1,453 µg/L in December 2014 to 928 µg/L in March 2015. TPH detections in groundwater at well MW4S reflect the elevated solvent concentrations in this well, rather than actual petroleum hydrocarbon detections
- The total TPH concentration in groundwater from well MW5 decreased from 3,662 µg/L in December 2014 to 2,576 µg/L in March 2015. A slight hydrocarbon odour was noted from the purged water and the groundwater sample at well MW5. The TPH composition is different to that at well MW4S, being predominantly in the C_8 - C_{16} carbon chain length range. This detection may be related to anecdotally-reported historical issues with a former fuel storage tank on a third party site adjacent to MW5
- Slightly elevated concentrations of ammoniacal nitrogen and potassium above guideline values were reported in the groundwater sample collected from MW3
- Elevated ammoniacal nitrogen, chloride, sodium, sulphate and potassium concentrations above adopted assessment criteria were reported at well MW4S

5. RECOMMENDATIONS

Based on the first round of 2015 quarterly groundwater monitoring, conducted in March 2015, which indicates continuing, declining long-term trends in the key VOC concentrations across the site, AECOM continue to recommend that agreement should be sought from the Agency to reduce the groundwater monitoring frequency from quarterly to biannually.

Figures

North

Approximate Scale

0 km 0.25 km 0.5 km

CLIENT

ENVA IRELAND LIMITED

PROJECT LOCATION

SMITHSTOWN INDUSTRIAL ESTATE, SHANNON

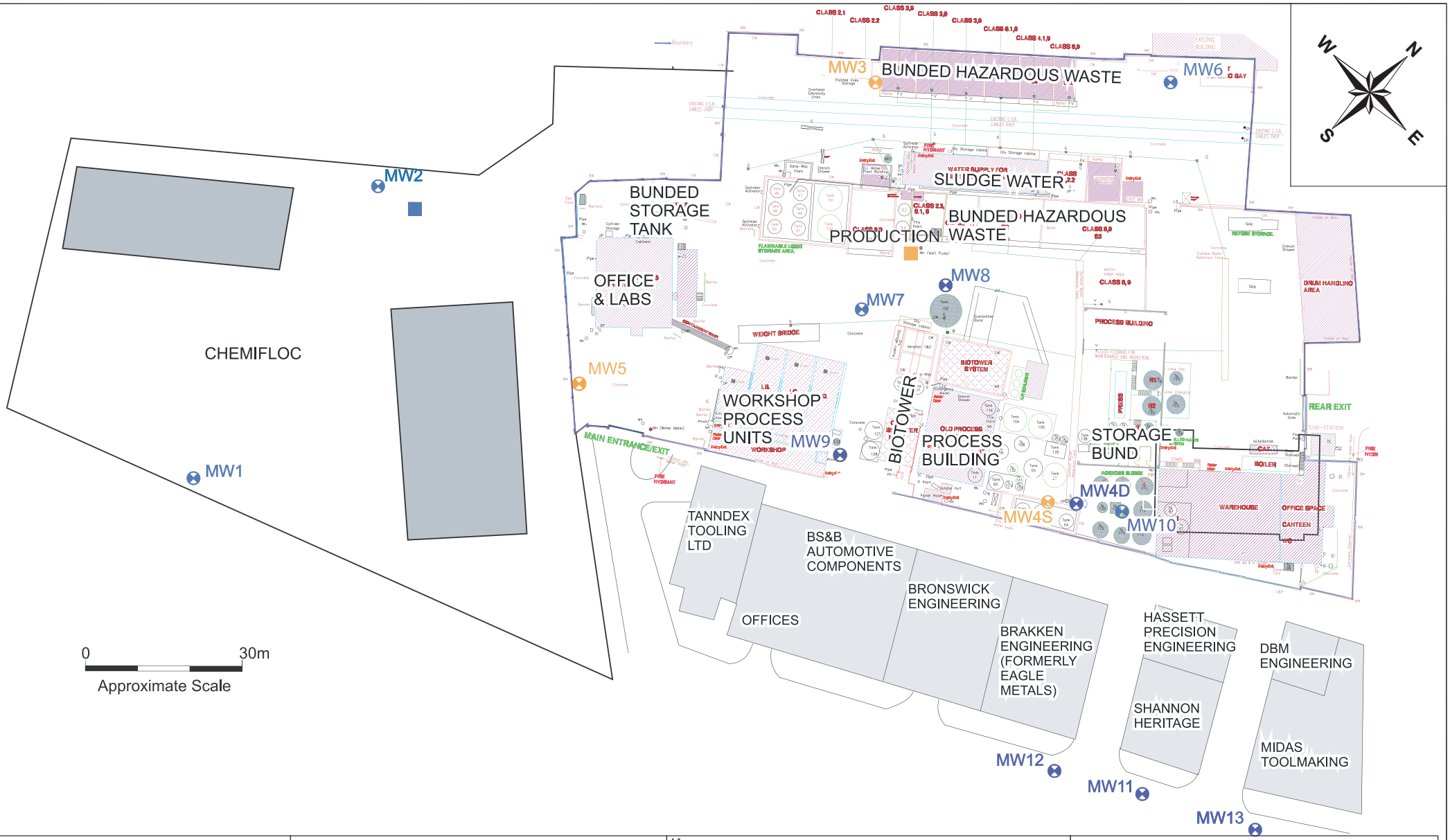
DRAWING TITLE

FIGURE 1 - SITE LOCATION PLAN

ENVIRONMENTAL CONSULTANTS

Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		FO'R	KF/COR	APR 2015
SCALE	Job No.			
AS SHOWN	47092963			A



CLIENT
ENVA IRELAND LIMITED

PROJECT LOCATION
SMITHSTOWN INDUSTRIAL ESTATE, SHANNON, CO. CLARE

DRAWING TITLE
FIGURE 2
SITE LAYOUT PLAN SHOWING BOREHOLE LOCATIONS
MARCH 2015

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		KF	KF/CORK	APR 2015
SCALE	Job No.			REV.
N.T.S	47092963			A

Key

- ENVA SITE BOUNDARY
- MW3 — MONITORING WELL SAMPLED
- MW1 — MONITORING WELL DIPPED
- SITE PRODUCTION WELL (NOT SAMPLED)
- CHEMIFLOC PRODUCTION WELL (NOT SAMPLED)

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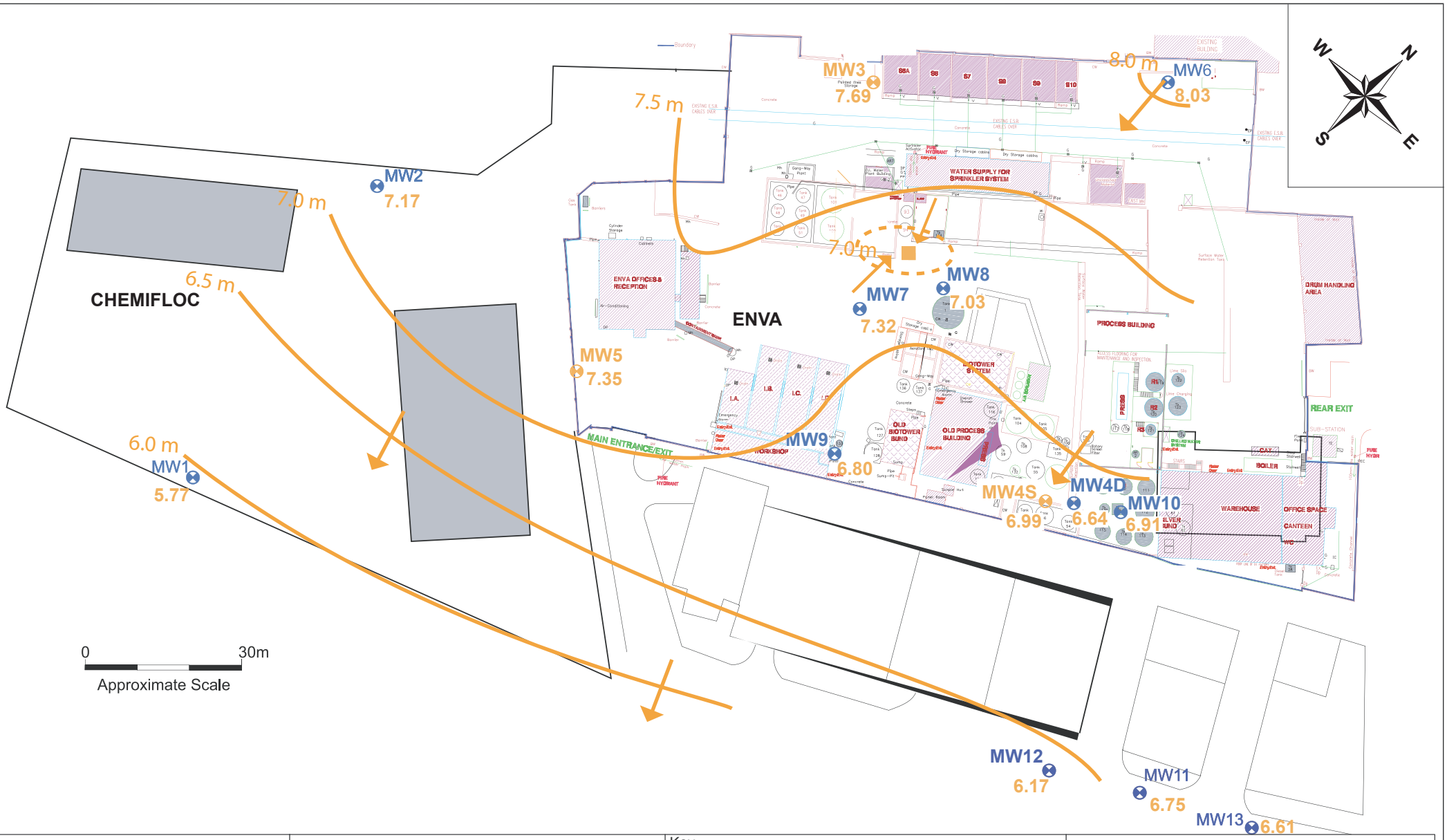

CLIENT	ENVA IRELAND LIMITED
PROJECT LOCATION	SMITHSTOWN INDUSTRIAL ESTATE, SHANNON, CO. CLARE
DRAWING TITLE	FIGURE 3 _GROUNDWATER CONTOUR PLAN (ENVA Q1 2015)

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		KF	KF/COR	APR 2015
SCALE	Job No.			REV.
N.T.S	47092963			A

Key

- ENVA SITE BOUNDARY
- MW3 MONITORING WELL SAMPLED
- MW1 MONITORING WELL DIPPED
- SITE PRODUCTION WELL
- CHEMIFLOC PRODUCTION WELL
- 5.35 GROUNDWATER ELEVATION (m Above Site Datum)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION

ENVIRONMENTAL CONSULTANTS

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Tables

Table 1: Sample Inventory - Enva Shannon, March 2015

Sampling Location	Field Parameters					Laboratory Parameters							
	pH	EC	Eh	T	DO	VOCs	SVOCs	Major Ions	Total Hydrocarbons	Total Oxidised Nitrogen (TON)	Ammoniacal Nitrogen	Total Organic Carbon (TOC)	Cyclohexane Extractable Matter (CEM)
MW3	x	x	x	x	x	x	x	x	x	x	x	x	x
MW4S	x	x	x	x	x	x	x	x	x	x	x	x	x
MW5	x	x	x	x	x	x	x	x	x	x	x	x	x

Notes:

EC - Electrical Conductivity
Eh - Redox Potential
T - Temperature
DO - Dissolved Oxygen
VOCs - Volatile Organic Compounds
SVOCs - Semi Volatile Organic Compounds
Major Ions to include Chloride, Sulphate, Potassium and Sodium
Total Petroleum Hydrocarbons - specifically Diesel and Petrol Range Organics

Compiled by: FO'R
Checked by: KF

Table 2: Water Level and Field Measurements - Enva Shannon, 31 March 2015

Sample Location	Sampling Date	SWL m btoc	Well Elevation m ASD	SWL m ASD	Total Depth m	Well Volume L	Minimum Purge Volume L	Actual Purge Volume L	pH	EC µS/cm	T °C	DO mg/L	Eh mV	Observations
MW1	**--**	5.031	10.80	5.77	12.18	--	--	--	--	--	--	--	--	**--**
MW2	**--**	3.89	11.05	7.17	8.50	--	--	--	--	--	--	--	--	--
MW3	31-Mar-15	3.03	10.72	7.69	12.24	18	54	55	6.51	1,048	12.8	2.09	132	Clear water, no evidence of contamination.
MW4S	31-Mar-15	4.06	11.05	6.99	10.37	12	37	38	6.72	1,581	10.8	1.44	96	Slightly cloudy grey water, possible solvent odour.
MW4D	--	4.35	10.99	6.64	26.46	--	--	--	--	--	--	--	--	--
MW5	31-Mar-15	3.23	10.57	7.35	12.37	18	54	55	7.16	726	11.7	3.56	3	Clear water, possible hydrocarbon odour.
MW6	--	2.72	10.75	8.03	11.85	--	--	--	--	--	--	--	--	--
MW7	--	2.81	10.13	7.32	15.00	--	--	--	--	--	--	--	--	--
MW8	--	2.98	10.00	7.03	15.91	--	--	--	--	--	--	--	--	--
MW9	--	3.17	9.97	6.80	23.29	--	--	--	--	--	--	--	--	--
MW10	--	4.08	10.99	6.91	17.13	--	--	--	--	--	--	--	--	--
MW11	--	2.13	8.88	6.75	12.80	--	--	--	--	--	--	--	--	--
MW12	--	2.55	8.72	6.17	12.72	--	--	--	--	--	--	--	--	--
MW13	--	1.89	8.50	6.61	12.39	--	--	--	--	--	--	--	--	--

Notes:

SWL - standing water level
m ASD - meters above site datum
m btoc - meters below top of casing
-- Not Measured
EC - Electrical Conductivity
Eh - Redox Potential
T - Temperature
DO - Dissolved Oxygen
µS/cm - micro Siemens per centimetre
mV - millivolts
°C - degrees centigrade
mg/L - milligrams per litre

* Well purged dry before three well volumes were removed

Note redox potential readings compensated by adding 200 mV to field readings as recommended by instrument manufacturer

Compiled by: FO'R
Checked by: KF

Table 3: Volatile Organic Compound Results (µg/L) - Enva Shannon, March 2015

Volatile Organic Compound	MRL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Dichlorodifluoromethane	2	nv	nv	-	-	-
Methyl Tertiary Butyl Ether	0.1	nv	30	-	-	-
Chloromethane	3	nv	nv	-	-	-
Vinyl Chloride	0.1	0.375	nv	**6**	***412***	-
Bromomethane	1	nv	nv	-	-	-
Chloroethane	3	nv	nv	-	-	-
Trichlorofluoromethane	3	nv	nv	-	4	-
1,1-Dichloroethene	3	nv	30*	5	-	-
Dichloromethane	3	nv	10	-	-	-
trans-1-2-Dichloroethene	3	nv	30*	-	6	-
1,1-Dichloroethane	3	nv	nv	45	168	-
cis-1-2-Dichloroethene	3	nv	30*	-	*917*	-
2,2-Dichloropropane	1	nv	nv	-	-	-
Bromochloromethane	2	nv	nv	-	-	-
Chloroform	2	75 [1]	12	-	*13*	-
1,1,1-Trichloroethane	2	nv	500	-	-	-
1,1-Dichloropropene	3	nv	nv	-	-	-
Carbon tetrachloride	2	nv	2	-	-	-
1,2-Dichloroethane	2	2	3	-	-	-
Benzene	0.5	0.75	1.0	-	***5***	**1**
Trichloroethene	3	7.5 [2]	70, 10**	-	-	-
1,2-Dichloropropane	2	nv	nv	-	-	-
Dibromomethane	3	nv	nv	-	-	-
Bromodichloromethane	2	75 [1]	nv	-	-	-
cis-1-3-Dichloropropene	2	nv	nv	-	-	-
Toluene	0.5	nv	10	-	*13*	-
trans-1-3-Dichloropropene	2	nv	nv	-	-	-
1,1,2-Trichloroethane	2	nv	nv	-	-	-
Tetrachloroethene	3	7.5 [2]	10, 40***	-	6	-
1,3-Dichloropropane	2	nv	nv	-	-	-
Dibromochloromethane	2	75 [1]	nv	-	-	-
1,2-Dibromoethane	2	nv	nv	-	-	-
Chlorobenzene	2	nv	1	-	-	-
1,1,1,2-Tetrachloroethane	2	nv	nv	-	-	-
Ethylbenzene	0.5	nv	10	-	10	-
p/m-Xylene	1	nv	10****	-	2	5
o-Xylene	0.5	nv	10****	-	10	4
Styrene	2	nv	nv	-	-	-
Bromoform	2	75 [1]	nv	-	-	-
Isopropylbenzene	3	nv	nv	-	-	-
1,1,2,2-Tetrachloroethane	4	nv	nv	-	-	-
Bromobenzene	2	nv	nv	-	-	-
1,2,3-Trichloropropane	3	nv	nv	-	-	-
Propylbenzene	3	nv	nv	-	-	-
2-Chlorotoluene	3	nv	nv	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	30
4-Chlorotoluene	3	nv	nv	-	-	-
tert-Butylbenzene	3	nv	nv	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	37
sec-Butylbenzene	3	nv	nv	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	4
1,3-Dichlorobenzene	3	nv	nv	-	-	-
1,4-Dichlorobenzene	3	nv	nv	-	-	-
n-Butylbenzene	3	nv	nv	-	-	-
1,2-Dichlorobenzene	3	nv	10	-	-	-
1,2-Dibromo-3-chloropropane	2	nv	nv	-	-	-
1,2,4-Trichlorobenzene	3	nv	0.4*****	-	-	-
Hexachlorobutadiene	3	nv	0	-	-	-
Naphthalene	2	nv	1	-	-	*10*
1,2,3-Trichlorobenzene	3	nv	0.4*****	-	-	-

Notes:

BOLD	Exceeds GTV
Italics	Exceeds Draft IGV
MRL	Method Reporting Limit
-	Less than the MRL
nv	No value

*Draft IGV is for the sum of dichloroethenes
**Two Draft IGVs are given for trichloroethene
***Two Draft IGVs are given for tetrachloroethene
****Draft IGV is for the sum of xylenes
*****Draft IGV is for the sum of trichlorobenzenes

[1]GTV is for the sum of trihalomethanes.
[2]GTV is for the sum of tetrachloroethene and trichloroethene.

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Checked by: KF

Table 4: Semi-volatile Organic Compound Results (µg/L) - Enva Shannon, March 2015

Volatile Organic Compound	MRL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Phenols						
2-Chlorophenol	1	nv	200	-	-	-
2-Methylphenol	0.5	nv	0.5 [1]	-	-	-
2-Nitrophenol	0.5	nv	0.5 [1]	-	-	-
2,4-Dichlorophenol	0.5	nv	*0.5* [1]	-	25	-
2,4-Dimethylphenol	1	nv	0.5 [1]	-	-	-
2,4,5-Trichlorophenol	0.5	nv	0.5 [1]	-	-	-
2,4,6-Trichlorophenol	1	nv	200	-	-	-
4-Chloro-3-methylphenol	0.5	nv	0.5 [1]	-	-	-
4-Methylphenol	1	nv	0.5 [1]	-	-	-
4-Nitrophenol	10	nv	0.5 [1]	-	-	-
Pentachlorophenol	1	nv	2	-	-	-
Phenol	1	nv	0.5 [1]	-	-	-
PAHs						
2-Chloronaphthalene	1	nv	nv	-	-	-
2-Methylnaphthalene	1	nv	nv	-	-	3
Naphthalene	1	nv	1	-	-	*7*
Acenaphthylene	0.5	nv	nv	-	-	-
Acenaphthene	1	nv	nv	-	-	-
Fluorene	0.5	nv	nv	-	-	-
Phenanthrene	0.5	nv	nv	-	-	-
Anthracene	0.5	nv	10000	-	-	-
Fluoranthene	0.5	nv	1	-	-	-
Pyrene	0.5	nv	nv	-	-	-
Benz(a)anthracene	0.5	nv	nv	-	-	-
Chrysene	0.5	nv	nv	-	-	-
Benzo(bk)fluoranthene	1	0.075 [A]	0.5, 0.05****	-	-	-
Benzo(a)pyrene	1	0.0075	0.01	-	-	-
Indeno(123cd)pyrene	1	0.075 [A]	0.05	-	-	-
Dibenzo(ah)anthracene	0.5	nv	nv	-	-	-
Benzo(ghi)perylene	0.5	0.075 [A]	0.05	-	-	-
Phthalates						
Bis(2-ethylhexyl) phthalate	5	nv	8	-	-	-
Butylbenzyl phthalate	1	nv	5 [2]	-	-	-
Di-n-butyl phthalate	1.5	nv	2	-	-	-
Di-n-Octyl phthalate	1	nv	5 [2]	-	-	-
Diethyl phthalate	1	nv	5 [2]	-	-	-
Dimethyl phthalate	1	nv	5 [2]	-	-	-
Other SVOCs						
1,2-Dichlorobenzene	1	nv	10	-	-	-
1,2,4-Trichlorobenzene	1	nv	0.4	-	-	-
1,3-Dichlorobenzene	1	nv	nv	-	-	-
1,4-Dichlorobenzene	1	nv	nv	-	-	-
2-Nitroaniline	10	nv	nv	-	-	-
2,4-Dinitrotoluene	0.5	nv	nv	-	-	-
2,6-Dinitrotoluene	10	nv	nv	-	-	-
3-Nitroaniline	10	nv	nv	-	-	-
4-Bromophenylphenylether	1	nv	nv	-	-	-
4-Chloroaniline	10	nv	nv	-	-	-
4-Chlorophenylphenylether	1	nv	nv	-	-	-
4-Nitroaniline	0.5	nv	nv	-	-	-
Azobenzene	0.5	nv	nv	-	-	-
Bis(2-chloroethoxy)methane	0.5	nv	nv	-	-	-
Bis(2-chloroethyl)ether	1	nv	nv	-	-	-
Carbazole	0.5	nv	nv	-	-	-
Dibenzofuran	0.5	nv	nv	-	-	-
Hexachlorobenzene	1	nv	0.03	-	-	-
Hexachlorobutadiene	1	nv	0.1	-	-	-
Hexachlorocyclopentadiene	10	nv	nv	-	-	-
Hexachloroethane	1	nv	nv	-	-	-
Isophorone	0.5	nv	nv	-	-	-
N-nitrosodi-n-propylamine	0.5	nv	nv	-	-	-
Nitrobenzene	1	nv	10	-	-	-

Notes:

BOLD	Exceeds GTV	1 - Draft IGV is for the sum of phenols
Italics	Exceeds Draft IGV	2 - Draft IGV is for the sum of phthalates
MRL	Method Reporting Limit	
-	Less than the MRL	GTV: Groundwater threshold value, SI No. 9 of 2010, Schedule 5
nv	No value	A - PAH compounds specified in GTV

Compiled by: FO'R
Checked by: KF

Table 5: Hydrocarbon Results (µg/L) - Enva Shannon, March 2015

Compound	MRL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
DRO/EPH (C_8-C_{40})	10	nv	10	-	*240*	*1,480*
GRO (C_4-C_8)	10	nv	10	*45*	*614*	*51*
GRO (C_8-C_{12})	10	nv	10	-	*74*	*1,045*
GRO (C_4-C_{12})	10	nv	10	*45*	*688*	*1,096*
TPH (C_4-C_{40})	10	nv	10	*45*	*928*	*2,576*

Notes:

BOLD	Exceeds GTV
Italics	Exceeds Draft IGV
MRL	Method Reporting Limit
-	Less than the MRL
nv	No value

Compiled by: FO'R
Checked by: KF

Table 6: Miscellaneous Parameter Results (mg/L) - Enva Shannon, March 2015

Compound	MRL	Units	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
					MW3	MW4S	MW5
Ammoniacal Nitrogen as NH_4	0.03	mg/L	0.08 - 0.22	0.150	***1***	***12***	0.1
Chloride	0.3	mg/L	187.5	250	137	***268***	65
Sulphate	0.05	mg/L	187.5	200	117	**194**	36
Sodium	0.1	mg/L	150	150	84	***300***	42
Potassium	0.1	mg/L	nv	5	*6*	*9*	3
Total Oxidised Nitrogen as N	0.2	mg/L	nv	No abnormal change	0.2	0.2	0.6
Total Organic Carbon	2	mg/L	nv	No abnormal change	5	16	5
Cyclohexane Extractable Matter	1	mg/L	nv	nv	-	2,229	1,631

Notes:

BOLD	Exceeds GTV
Italics	Exceeds Draft IGV
MRL	Method Reporting Limit
-	Less than the MRL
nv	No value

Appendix A - SCHEDULE OF ANALYSIS

Appendix A - Shannon Facility: The following table sets out the monitoring requirements of Waste Licence W0041-01 as detailed in Schedule F.3.

Parameter	Quarterly	Annually
Ammoniacal Nitrogen	✓	
Total Organic Carbon	✓	
Cyclohexane Extractable Matter	✓	
Volatile Organic Compounds (VOCs), including chlorinated solvents	✓	
Semi Volatile Organic Compounds (VOCs)	✓	
Total Petroleum Hydrocarbons (TPH)-DRO and PRO banding	✓	
Chloride	✓	
Total Oxidised Nitrogen	✓	
Sulphate	✓	
Potassium	✓	
Sodium	✓	
Phosphate		✓
Total Alkalinity		✓
Calcium		✓
Cyanide		✓
Cadmium		✓
Chromium		✓
Copper		✓
Iron		✓
Lead		✓
Magnesium		✓
Manganese		✓
Mercury		✓
Nickel		✓
Arsenic		✓
Total Dissolved Solids (TDS)-residue on evaporation		✓
Total Phenols		✓

Appendix B – VALIDATED LABORATORY RESULTS

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

AECOM
Acorn Business Campus
Mahon Industrial Park
Black Rock
Cork
Ireland

Attention :	Fergus O'Regan
Date :	9th April, 2015
Your reference :	3153102
Our reference :	Test Report 15/5602 Batch 1
Location :	Shannon
Date samples received :	1st April, 2015
Status :	Final report
Issue :	1

Three samples were received for analysis on 1st April, 2015 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: AECOM
Reference: 3153102
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/5602

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5	6-10	11-15									
Sample ID	MW3	MW4S	MW5									
Depth												
COC No / misc												
Containers	V H P G	V H P G	V H P G									
Sample Date	31/03/2015	31/03/2015	31/03/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	01/04/2015	01/04/2015	01/04/2015									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Dissolved Potassium #	6.4	9.3	2.6								<0.1	mg/l	TM30/PM14
Dissolved Sodium #	83.7	300.4 A	42.4								<0.1	mg/l	TM30/PM14
EPH (C8-C40) #	<10	240	1480								<10	ug/l	TM5/PM30
GRO (>C4-C8) #	45	614	51								<10	ug/l	TM36/PM12
GRO (>C8-C12) #	<10	74	1045								<10	ug/l	TM36/PM12
GRO (>C4-C12) #	45	688	1096								<10	ug/l	TM36/PM12
TPH (C4-C40)	45	928	2586										
Sulphate #	117.42	194.20	35.54								<0.05	mg/l	TM38/PM0
Chloride #	136.9	268.3	65.1								<0.3	mg/l	TM38/PM0
Total Oxidised Nitrogen as N #	0.2	0.2	0.6								<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	0.90	9.31	0.06								<0.03	mg/l	TM38/PM0
SEM	<1	2229	1631								<1	mg/l	TM7/PM9
Total Organic Carbon #	5	16	5								<2	mg/l	TM60/PM0

Client Name: AECOM
Reference: 3153102
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/5602

Report : Misc

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-5												
Sample ID	MW3												
Depth													
COC No / misc													
Containers	V H P G												
Sample Date	31/03/2015												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	01/04/2015												
Sample Temperature	6.7											<0.1	Degrees C	NONE/NONE

Please see attached notes for all abbreviations and acronyms

Client Name: AECOM
Reference: 3153102
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/5602

SVOC Report : **Liquid**

J E Sample No.	1-5	6-10	11-15									
Sample ID	MW3	MW4S	MW5									
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V H P G	V H P G	V H P G									
Sample Date	31/03/2015	31/03/2015	31/03/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	01/04/2015	01/04/2015	01/04/2015									
SVOC MS										LOD/LOR	Units	Method No.
Phenols												
2-Chlorophenol #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	25.1	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1							<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1							<1	ug/l	TM16/PM30
Phenol	<1	<1	<1							<1	ug/l	TM16/PM30
PAHs												
2-Chloronaphthalene #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	3							<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	7							<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1							<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1							<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1							<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1							<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phthalates												
Bis(2-ethylhexyl) phthalate	<5	<5	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30

Client Name: AECOM
Reference: 3153102
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/5602

SVOC Report : **Liquid**

J E Sample No.	1-5	6-10	11-15									
Sample ID	MW3	MW4S	MW5									
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V H P G	V H P G	V H P G									
Sample Date	31/03/2015	31/03/2015	31/03/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	01/04/2015	01/04/2015	01/04/2015									
SVOC MS										LOD/LOR	Units	Method No.
Other SVOCs												
1,2-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Fluorobiphenyl	71	84	91							<0	%	TM16/PM30
p-Terphenyl-d14	80	102	99							<0	%	TM16/PM30

Client Name: AECOM
Reference: 3153102
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/5602

VOC Report : **Liquid**

J E Sample No.	1-5	6-10	11-15									
Sample ID	MW3	MW4S	MW5									
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V H P G	V H P G	V H P G									
Sample Date	31/03/2015	31/03/2015	31/03/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	01/04/2015	01/04/2015	01/04/2015									
VOC MS										LOD/LOR	Units	Method No.
Dichlorodifluoromethane	<2	<2	<2							<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1							<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3							<3	ug/l	TM15/PM10
Vinyl Chloride #	5.9	412.2	<0.1							<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1							<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3							<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	4	<3							<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	5	<3	<3							<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3							<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	6	<3							<3	ug/l	TM15/PM10
1,1-Dichloroethane #	45	168	<3							<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	917	<3							<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1							<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2							<2	ug/l	TM15/PM10
Chloroform #	<2	13	<2							<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2							<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3							<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2							<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2							<2	ug/l	TM15/PM10
Benzene #	<0.5	5.3	1.3							<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3							<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2							<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3							<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2							<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2							<2	ug/l	TM15/PM10
Toluene #	<0.5	13.2	<0.5							<0.5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2							<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2							<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	6	<3							<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2							<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2							<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2							<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2							<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2							<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	10.3	<0.5							<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	2	5							<1	ug/l	TM15/PM10
o-Xylene #	<0.5	9.5	4.2							<0.5	ug/l	TM15/PM10
Styrene	<2	<2	<2							<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2							<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4							<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2							<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3							<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	30							<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3							<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	37							<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	4							<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3							<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2							<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3							<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3							<3	ug/l	TM15/PM10
Naphthalene	<2	<2	10							<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3							<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	98	100	100							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	105	109	104							<0	%	TM15/PM10

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 15/5602

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range
A	x5 Dilution

JE Job No: 15/5602

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM7	Modified USEPA 3540 and 9071 for oily wastes. In house method for the gravimetric determination of a sample following solvent extraction.	PM9	Extraction of organic determinands from a water/leachate sample by mixing with an organic solvent.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes			
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.	Yes			

JE Job No: 15/5602

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code				

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Groundwater Monitoring Round 2 (June) 2015

26 June 2015

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Issue No. 1 Draft

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[1] On 16 March 2015 the name of URS Ireland Limited changed to AECOM Infrastructure & Environment Ireland Limited to reflect the company's status as a wholly owned subsidiary through which AECOM operates in Ireland.

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1. INTRODUCTION

1.1 Introduction

AECOM Infrastructure & Environment Ireland Limited (AECOM) is pleased to present this report to Enva Ireland Limited (Enva) for the Quarter 2 (Q2 - June) 2015 groundwater monitoring round conducted at the Enva Shannon Facility, Smithstown, Shannon, Co. Clare (the site). A site location plan is presented in Figure 1.

Works were completed in accordance with AECOM Proposal Number 3153102, '***Enva Shannon Groundwater Monitoring 2015***', dated 11 March 2015.

Enva has a network of nine on-site groundwater monitoring wells and three off-site groundwater monitoring wells. The off-site wells are located to the southeast in a parking area. Enva also has access to two groundwater monitoring wells located on an adjacent site (Chemifloc) to the west. A site layout plan showing borehole locations is presented in Figure 2.

Under the terms of the site's Waste Licence (W0041-01), Enva are required to monitor the quality of groundwater in monitoring wells MW3, MW4S and MW5 at quarterly intervals for a range of organic and inorganic parameters.

A five-year monitored natural attenuation (MNA) remediation program was completed between 2002 and 2007, which demonstrated that volatile organic compound (VOC) concentrations in groundwater underlying the Enva site are declining and that there are no sensitive receptors located in the vicinity of the site.

Given the long timescales involved for the degradation of chlorinated solvents, it was recommended that MNA remediation program be undertaken on a reduced scope following the completion of the five-year MNA program.

As such, the Environmental Protection Agency (EPA) also requires that Enva monitor groundwater quality in five on-site wells (MW4S, MW8, MW9, MW10 and the on-site Enva Production Well) for VOCs and a range of redox indicator compounds on an annual basis. This MNA assessment is typically conducted during the Q2 monitoring round each year.

The Q2 2015 Waste Licence groundwater monitoring and the annual MNA groundwater monitoring was completed on 11 June 2015.

2. SCOPE OF WORKS

The following scope of work was completed by an experienced AECOM field scientist on 11 June 2015:

- Water level measurement at all accessible monitoring wells, both on and off-site
- Well purging and measurement of water quality parameters at monitoring wells MW3, MW4S, MW5, MW8, MW9 and MW10
- Groundwater sampling and analysis from monitoring wells MW3, MW4S and MW5 in accordance with Waste Licence monitoring requirements
- Groundwater sampling and analysis from monitoring wells MW4S, MW8, MW9, MW10 and the site's Production Well as part of the MNA assessment programme

2.1 Water Level Measurement

Measurement of water levels was completed in all accessible on site monitoring wells (MW3, MW4S, MW4D, MW5, MW6, MW7, MW8, MW9 and MW10) and in monitoring wells located on the Chemifloc site (MW1 and MW2). Water levels in wells located to the southeast in a parking area outside of the site boundary (MW11, MW12 and MW13) were also measured.

At each well, an interface probe was used to monitor depth to groundwater and total depth of the well to assess the presence of free phase product.

2.2 Well Purging and Water Quality Measurements

The volume of standing water in each of the groundwater monitoring wells to be sampled was calculated based on measured water levels. Between two and three times this volume was then purged from the wells. Where a well purged dry before three well volumes were removed, the well was allowed to recover and then sampled.

Water quality measurements were taken toward the end of purging using a calibrated water quality field meter in a flow-through cell fitted to the sampling tubing (where possible). Pumping continued until stable field measurements were recorded. Field measurements including pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and oxidation-reduction potential (ORP) were recorded.

Monitoring wells MW3, MW4S, MW5, MW8, MW9 and MW10 were purged and sampled using dedicated, in-situ, inertial lift pumping equipment to minimise volatilisation and loss of VOCs.

The sample from the Enva Production Well was taken directly from a tap on the pipework from the pump to the water holding tank.

2.3 Groundwater Sampling

Groundwater samples were collected from monitoring wells MW3, MW4S and MW5 and analysed for the Waste Licence monitoring parameters, as detailed in Appendix A and Table 1.

Groundwater samples were also collected from monitoring wells MW4S, MW8, MW9, MW10 and the onsite Production Well and analysed for the MNA parameters, also detailed in Table 1.

Groundwater samples were collected into clean, laboratory-supplied sample containers. Samples were handled by field staff wearing single use, disposable nitrile gloves, which were changed between sampling locations to minimise cross-contamination.

Samples were labelled in the field and sample details were entered onto a chain of custody form. Whilst on-site and during transit, the groundwater samples were stored in a chilled cool box.

The samples were sent by overnight courier to Jones Environmental Laboratories U.K., an AECOM - approved laboratory.

3. RESULTS

3.1 Field Observations

The following observations were recorded during purging and sampling on 11 June 2015:

- No floating or sinking free phase product was detected in any of the groundwater monitoring wells dipped or sampled
- A slight hydrocarbon sheen on the purged water was reported at wells MW5 and MW9
- A chemical odour was reported from the groundwater sample collected from well MW4S
- No evidence of contamination in the form of odours, sheens or separate phase liquids was reported in groundwater samples from wells MW3, MW8, MW10 and the onsite Production Well

Field measurements of water quality parameters are presented in Table 2 and are summarised below:

- pH values ranged from 6.64 (MW3) to 7.45 (MW4S) and were within the normal range for groundwater at the site
- EC values in monitoring wells MW5 (771 µS/cm), MW8 (997 µS/cm), MW10 (961 µS/cm) and the Enva Production Well (732 µS/cm) were within the normal range for groundwater in Ireland (EPA Draft Interim Guideline Value = 1,000 µS/cm and Upper Groundwater Threshold Value = 1,875 µS/cm). Elevated EC readings were recorded in groundwater at wells MW3, MW4S and MW9. The highest EC value was recorded at well MW4S (1,583 µS/cm); this is consistent with the previous monitoring rounds, although the Q2 2015 EC result for MW4S is lower than recent monitoring rounds (e.g. EC value of 4,348 µS/cm recorded in Round 2 2014)
- Field oxidation-reduction potential (ORP) readings were compensated, as recommended by the instrument manufacturer. The adjusted redox (Eh) readings ranged between -34 mV (MW5) and 193 mV (MW10) and indicate reducing (anaerobic) groundwater conditions
- Groundwater temperatures ranged from 11.3 ^{o}C (MW10) to 13.1 ^{o}C (Production Well). The Groundwater temperature readings were generally close to or slightly above the normal range for groundwater in Ireland (10.0 ^{o}C to 12.0 ^{o}C)
- Dissolved oxygen ranged from 0.79 mg/L (MW9) to 3.13 mg/L (MW5). Groundwater conditions beneath the site can therefore be described as anaerobic (under saturated with respect to oxygen) and are consistent with the redox potential readings noted above. For comparison, fully aerated groundwater at the observed temperatures would be expected to have dissolved oxygen concentrations in the region of 10 mg/L

3.2 Groundwater Flow Direction

The direction of groundwater flow under natural gradient conditions is expected to follow the local topographic gradient towards the south and southeast, eventually discharging to the Shannon Estuary. However, abstraction from Enva's Production Well prevents groundwater from following the natural gradient, especially in the central part of the site.

It is not possible to measure the depth to water in the Enva Production Well located in the centre of the site, as there is no access to the well.

Wellhead elevations and standing water level measurements in all other accessible wells were used to calculate water table elevations and infer a groundwater flow pattern, which is presented as Figure 3.

In June 2015, the general groundwater flow direction is inferred to be to the south and south-west. Groundwater flow in the central part of the site is towards the Enva Production Well (see Figure 3).

3.3 Data Assessment

3.3.1 Assessment Criteria

The required groundwater analysis is listed in Schedule F.3 of the Waste Licence and is presented in Appendix A. No Emission Limit Values are specified in the Licence for groundwater; therefore, assessment criteria were sourced from published guidance selected based on the site setting.

The nearest surface water feature to the site is an unnamed stream located approximately 100 m east of the site. This stream eventually flows into the Shannon Estuary, which is located approximately 2km south of the site. The bedrock aquifer is classified by the Geological Survey of Ireland (GSI) as a '***poor aquifer – bedrock which is generally unproductive except for local*** zones'. GSI records show that there are nine groundwater monitoring wells located on or in the vicinity of the site. GSI records indicate that there are no drinking water abstraction wells located in the vicinity of the site.

As such, general groundwater quality was assessed by comparing analytical results to the following guidelines:

- European Communities Environmental Objectives (Groundwater) Regulations, 2010. Statutory Instrument No. 9 of 2010 (GTVs)
- Environmental Protection Agency's Draft Interim Guidelines Value for the Protection of Groundwater, 2003 (IGVs)

3.3.2 Analytical Results

The validated laboratory report is presented in Appendix B. Groundwater analytical results are presented in Tables 3 to 7. A summary of analytical results is presented below.

Volatile Organic Contaminants (VOCs)

Trichloroethene (TCE) was detected above the adopted assessment criteria in groundwater samples (MW8, MW9 and the Enva Production Well) in June 2015. Concentrations of TCE above the GTV (7.5 µg/L) and IGV (10 µg/L) ranged between 28 µg/L (well MW9) and 165 µg/L (Enva Production Well).

Tetrachloroethene (PCE) was detected at concentrations above the adopted assessment criteria at monitoring well MW8 (56 µg/L) and the Enva Production Well (158 µg/L). The GTV (7.5 µg/L) is for the sum of PCE and TCE. Two IGVs are defined for PCE and the lower value is 10 µg/L.

Concentrations of cis-1-2-dichloroethene (cDCE) were detected above the IGV (30 µg/L) at monitoring wells MW4S (989 µg/L), MW8 (136 µg/L), MW9 (377 µg/L) and the Enva Production Well (270 µg/L). There is no GTV defined for cDCE.

In June 2015, concentrations of vinyl chloride (VC) above the adopted assessment criteria were recorded in groundwater samples (MW3, MW4S, MW8, MW9, MW10 and the Enva Production Well. Concentrations of VC above the GTV (0.375 µg/L) ranged between 5 µg/L (Enva Production Well) and 201 µg/L (well 4S). There is no IGV defined for cDCE.

Dichloromethane (DCM) was detected above the IGV (10 µg/L) in groundwater from well MW4S (13 µg/L) in June 2015. There is no GTV defined for DCM.

Benzene was reported above both the GTV (0.75 µg/L) and IGV (1 µg/L) at well MW4S (3 µg/L) in Q2 2015.

Concentrations of naphthalene[2] were detected above the IGV (1 µg/L) at monitoring well MW5 (7 µg/L). There is no GTV defined for naphthalene.

Semi-Volatile Organic Contaminants (SVOCs)

2,4-dichlorophenol was detected at a concentration of 11 µg/L in groundwater from well MW4S in Q2 2015. The IGV for the sum of the phenol compounds is 0.5 µg/L.

In June 2015, naphthalene[3] was the only SVOC detected above the MDL in groundwater from well MW5. The June 2015 naphthalene result at well MW5 (11 µg/L) exceeded the IGV of 1 µg/L.

[2] Lab method - Modified USEPA 8260 - Quantitative Determination of VOCs by Headspace GC-MS

Hydrocarbons

Diesel range organics (DRO) (C_8-C_{40}) were detected above the laboratory method detection limit (MDL) in groundwater from wells MW4S and MW5 in June 2015 at concentrations of 150 µg/L and 1,380 µg/L, respectively.

Relatively low concentrations of gasoline range organics (GRO) (C_4–C_{12}) (40 µg/L) were detected in groundwater from well MW3 in June 2015. More elevated concentrations of GRO (C_4-C_{12}) were reported in groundwater samples MW4S (607 µg/L) and MW5 (694 µg/L).

Total petroleum hydrocarbon (TPH) concentrations in groundwater from all three Waste Licensed groundwater monitoring wells exceeded the assessment criteria (IGV of 10 µg/L).

At well MW5, the TPH composition is different to that at well MW4S, being predominantly in the C_8-C_{16} carbon chain length range. This detection may be related to anecdotally-reported historical issues with a former fuel storage tank on a third party site adjacent to MW5.

Ammonium as NH_4

In water, ammonia (NH_3) typically dissociates to form the ammonium ion (NH_4), particularly at pH values of less than 7. Reported concentrations of ammoniacal nitrogen (as NH_4) in groundwater samples MW3 (1 mg/L) and MW4S (17 mg/L) exceeded the adopted assessment criteria. The GTV for ammonium is 0.175 mg/L and the IGV is 0.15 mg/L.

Chloride

Reported concentrations of chloride ranged between 44 mg/L (Enva Production Well) and 339 mg/L (MW3). The concentrations of chloride reported for all seven groundwater samples collected in June 2015 exceeded both the Lower GTV (24 mg/L) and IGV (30 mg/L). Reported chloride concentrations at wells MW3 (339 mg/L), MW4S (304 mg/L) and MW9 (213 mg/L) also exceeded the Upper GTV of 187.5 mg/L.

Sulphate

Reported concentrations of sulphate ranged between 30 mg/L (MW5) and 166 mg/L (MW4S). All reported concentrations of sulphate in June 2015 were below the adopted assessment criteria.

Sodium

Reported concentrations of sodium ranged between 44 mg/L (MW5) and 277 mg/L (MW4S). The reported concentration of sodium in sample MW4S exceeded the adopted assessment criteria (GTV and IGV both 150 mg/L).

Potassium

Reported concentrations of potassium ranged between 3 mg/L (MW5) and 14 mg/L (MW4S). The reported concentrations of potassium in samples MW3 and MW4S exceeded the IGV (5 mg/L). There is no IGV defined for potassium.

Total Oxidised Nitrogen (TON)

TON was detected at a concentration of 0.3 mg/L in groundwater from well MW5 in June 2015. TON was below the laboratory MDL (<0.2 mg/L) in the samples from wells MW3 and MW4S. There is no appropriate assessment criterion available for TON.

Total Organic Carbon (TOC)

TOC was only detected above the laboratory MDL (2 mg/L) in groundwater from well MW4S (8 mg/L). There is no appropriate assessment criterion available for TOC.

Cyclohexane Extractable Matter (CEM)

Concentrations of CEM ranged from below the MDL (<1 mg/L) (MW3) to 80 mg/L (MW5). There is no appropriate assessment criterion available for CEM.

3.3.3 Monitored Natural Attenuation Monitoring 2015

A summary of groundwater monitoring VOC analytical data collected between 1998 and June 2015 is presented in Appendix C for monitoring wells MW3, MW4S, MW5, MW8, MW9, MW10 and the Enva Production Well.

[3] Lab method - Modified USEPA 8270 -Quantitative determination of SVOCs by GC-MS

Over this period, an overall decreasing trend is observed in concentrations of VOCs reported in all seven wells sampled.

MW3

MW3 is located on the up-gradient western site boundary. Since January 2001, total VOC concentrations are relatively low in groundwater from this well, typically fluctuating between 200 µg/L and 600 µg/L (see Appendix C1). In general, the detected compounds are dominated by chlorinated ethanes. Total VOC concentrations increased slightly between June 2014 (16 µg/L) and June 2015 (64 µg/L).

MW4S

MW4S is located in the south eastern part of the site near the processing and storage areas. Since 2000, total VOC concentration in MW4S has decreased from 40,000 µg/L between 2000 and 2003 to approximately 10,000 µg/L or lower since 2008 and to 2,000 µg/L or less since 2014.

More recently, a decrease in total VOC concentrations at well MW4S is noted between May 2012 (10,785 µg/L) and the most recent monitoring round completed in June 2015 (1,594 µg/L).

Total VOC concentrations for March 2015 and June 2015 are amongst the two lowest results to date (1,567 µg/L and 1,594 µg/L, respectively).

Groundwater samples collected from well MW4S have always had both the highest total VOC concentrations and the greatest variety of organic compounds detected.

Based on data collected between 2011 and 2015:

- 65 - 77% of the organic compounds is accounted for by chlorinated ethenes, primarily the less chlorinated forms of cDCE and VC
- 22 - 33% is accounted for chlorinated ethanes, primarily the more heavily chlorinated form 1,1,1-trichloroethane
- 1 - 3% is accounted for chlorinated methanes
- 1 - 3% is accounted for by other VOCs including BTEX hydrocarbons

MW5

MW5 is located next to Enva's southwestern site boundary with Chemifloc. The lowest total VOC concentrations are reported in groundwater samples collected at this well, usually less than 10 µg/L. The highest reported VOC concentration was 206 µg/L in February 1998, as such, an overall decreasing trend is apparent, see Appendix C3.

The spike in total organics in MW5 in September 2014 was composed of trimethylbenzene, naphthalene and xylenes, which are common constituents of heating oil type contamination.

In June 2015, low concentrations of trimethylbenzene (17 µg/L) and naphthalene (7 µg/L) were detected in groundwater from the well. Both compounds are common indicators of diesel or lubricating oils and may indicate slight contamination potentially entering the well. In June 2015 DRO and GRO were also detected above laboratory MDLs in groundwater from well MW5.

MW8

MW8 is located in the middle of the site near the Enva Production Well and down-gradient of well MW4S and well MW4D. Between 2001 and 2007, total VOC concentrations in groundwater from this well were generally between 2,000 µg/L and 8,000 µg/L, see Appendix C4. Since December 2007 a decrease in total VOC concentrations was observed (concentrations decreased from 4,109 µg/L in December 2007 to 257 µg/L June 2015).

The suite of VOCs present in groundwater from MW8 is predominately chlorinated ethenes (98%).

The total VOC concentration recorded in June 2015 is the lowest on record for well MW8.

MW9

MW9 is located west of well MW4S, close to the southern site boundary. Prior to early-2005 the total VOC concentration in groundwater from MW9 was below 1,000 µg/L. However, between May 2005

and December 2007 total VOC concentrations followed an increasing trend, peaking at approximately 7,000 µg/L in June 2007.

Since December 2007, an overall decreasing trend is apparent at this well with total VOC concentrations decreasing from 6,283 µg/L to 741 µg/L in June 2015. This is illustrated in Appendix C5.

Between September 2002 and December 2007, the suite of VOCs present in groundwater from MW9 was dominated by chlorinated ethanes. However, analytical results collected between 2010 and 2015 indicate that the proportion of chlorinated ethanes present in groundwater from MW9 has decreased from approximately 90% to 25%. As a consequence, the proportion of chlorinated ethenes has increased from approximately 10% to 75% during the same time period.

MW10

Similar to MW9, the total VOC concentration trend in MW10 had been declining up to early-2005, from over 9,000 µg/L to less than 2,000 µg/L. However, between May 2005 and December 2007 total VOC concentrations followed an increasing trend, up to approximately 6,000 µg/L. Since December 2007, a significant decrease in total VOC concentrations was observed from 6,213 µg/L to 55 µg/L in June 2015. This is illustrated in Appendix C6.

In general, the detected compounds are dominated by chlorinated ethanes (approximately 90% of VOCs). However, the last four monitoring rounds between May 2012 and June 2015 has seen a decrease in the proportion of the chlorinated ethanes from approximately 90% to 75% with a similar increase in chlorinated ethenes over the same period.

The total VOC concentration recorded in June 2015 is the lowest on record for well MW10.

Production Well

The Enva Production Well is located in the middle of the site, close to well MW8. Between August 2001 and May 2006, total VOC concentrations fluctuated between 2,000 µg/L and 3,000 µg/L. Between November 2006 and May 2011, the total VOC concentrations remained relatively stable at approximately 2,000 µg/L.

Since May 2012, the total VOC concentration at the Enva Production Well has remained below 1,000 µg/L. The total VOC concentration recorded in June 2015 (628 µg/L) is the third lowest VOC concentration on record for the Production Well. A summary of total VOC concentrations is presented in Appendix C7.

The suite of VOCs detected in the Production Well is similar to that present in groundwater from well MW8, it is dominated by chlorinated ethenes (>95%), with the more heavily chlorinated ethenes, PCE and TCE, detected at higher concentrations than less chlorinated forms.

Redox state within groundwater beneath the site

A summary of reduction oxidation (redox) indicators is presented in Table 7. Based on available analytical data, groundwater conditions beneath the site are predominantly reducing. Analytical data collected in June 2015 was consistent with analytical data for redox indicators collected in June 2014.

Concentrations of dissolved iron and manganese detected above background concentrations, at monitoring wells MW4S, MW9 and MW10 indicate reducing groundwater conditions.

The prevalence of reducing groundwater conditions is conducive to the natural in-situ biodegradation of chlorinated solvents through reductive dechlorination. The relative concentrations of cDCE and VC, above TCE in groundwater from wells MW4S, MW8 and MW9, indicate that reductive dechlorination of chlorinated ethenes is occurring in this area of the site (see Appendices C2, C4 and C5).

4. CONCLUSIONS

The findings of the Q2 (June) 2015 groundwater monitoring event are as follows:

- Groundwater contours indicate that groundwater, particularly in the central part of the site, is influenced by pumping from the Enva Production Well.
- The general direction of groundwater flow under Q2 hydrogeological conditions is to the south
- The highest concentrations of VOCs were reported in the groundwater samples collected from monitoring wells MW4S (total VOCs 1,594 µg/L) and MW9 (total VOCs 741 µg/L). Both MW4S and MW9 are located in the southern part of the site.
- The groundwater sample collected from well MW4S in June 2015, contained concentrations of VC (201 µg/L), cDCE (989 µg/L), DCM (13 µg/L) and benzene (3 µg/L) above the assessment criteria. The total VOC concentration at well MW4S increased marginally between March 2015 and June 2015 from 1,567 µg/L to 1,594 µg/L. However, the total reported VOC concentration at well MW4S in Q2 2015 is the second lowest on record (excluding February 2011 – when there was a possible lab error associated with the reported results)
- The groundwater sample collected from well MW9 in June 2015, contained concentrations of VC (128 µg/L), cDCE (377 µg/L) and TCE (28 µg/L) above the assessment criteria. The total VOC concentration at well MW9 decreased between June 2014 (1,015 µg/L) and June 2015 (741 µg/L)
- Lower concentrations of VOCs (between 24 µg/L and 628 µg/L) were reported in the groundwater samples collected from monitoring wells MW3 (located in the northwest of the site), Enva's Production Well, MW8 and MW10 (located in southern part of the site) and MW5 (located in the western part of the site)
- No SVOCs were detected in groundwater from well MW3 in Q2 2015
- In June 2014, 2,4-dichlorophenol (11 µg/L) was detected at well MW4S. The reported concentration of 2,4-dichlorophenol exceeded the IGV (0.5 µg/L)
- 2-Methylnaphthalene (7 µg/L) and naphthalene (11 µg/L) were detected in groundwater from well MW5. The reported concentration of naphthalene exceeded the IGV (1 µg/L), there is no appropriate assessment criterion for 2-methylnaphthalene
- Consistent with previous monitoring rounds, DRO and GRO were detected above MDLs at all three Waste Licensed wells monitored in June 2015. Reported TPH concentrations ranged between 40 µg/L (MW3) and 2,074 µg/L (MW5), with all three results exceeding the assessment criteria
- The total TPH concentration for well MW4S decreased from 928 µg/L in March 2015 to 757 µg/L in June 2015. TPH detections in groundwater at well MW4S reflect the elevated solvent concentrations in this well, rather than actual petroleum hydrocarbon detections
- The total TPH concentration in groundwater from well MW5 decreased from 2,576 µg/L in March 2015 to 2,074 µg/L in June 2015. A slight hydrocarbon odour was noted from the purged water and the groundwater sample at well MW5. The TPH composition is different to that at well MW4S, being predominantly in the C_8-C_{16} carbon chain length range. This detection may be related to anecdotally-reported historical issues with a former fuel storage tank on a third party site adjacent to MW5
- Elevated concentrations of ammoniacal nitrogen, chloride, sodium and potassium above guideline values were reported in the groundwater samples collected from MW3 and MW4S
- Chloride was the only major ion elevated above the assessment criteria at wells MW5, MW8, MW9, MW10 and the Enva Production Well
- Since MNA monitoring commenced, an overall decreasing trend is observed in concentrations of VOCs in all monitoring wells. The June 2015 total VOC concentrations in most wells are amongst the lowest recorded in groundwater at the site

- Dissolved iron was detected above the assessment criteria in groundwater from wells MW4S, MW9, MW10 and the Production Well in June 2015

- Dissolved manganese was detected above the assessment criteria in groundwater from wells MW4S, MW8, MW9, MW10 and the Production Well

- Groundwater conditions beneath the site remain reducing and conducive to the continuing in-situ degradation of chlorinated organic solvents. Dissolved phase chlorinated solvents continue to be broken down through reductive dechlorination

5. RECOMMENDATIONS

Based on the second round of 2015 quarterly groundwater monitoring, conducted in June 2015, which indicates continuing, declining long-term trends in the key VOC concentrations across the site, AECOM continue to recommend that agreement should be sought from the Agency to reduce the groundwater monitoring frequency from quarterly to biannually.

Figures

North

Approximate Scale

0 km 0.25 km 0.5 km

CLIENT

ENVA IRELAND LIMITED

PROJECT LOCATION

SMITHSTOWN INDUSTRIAL ESTATE, SHANNON

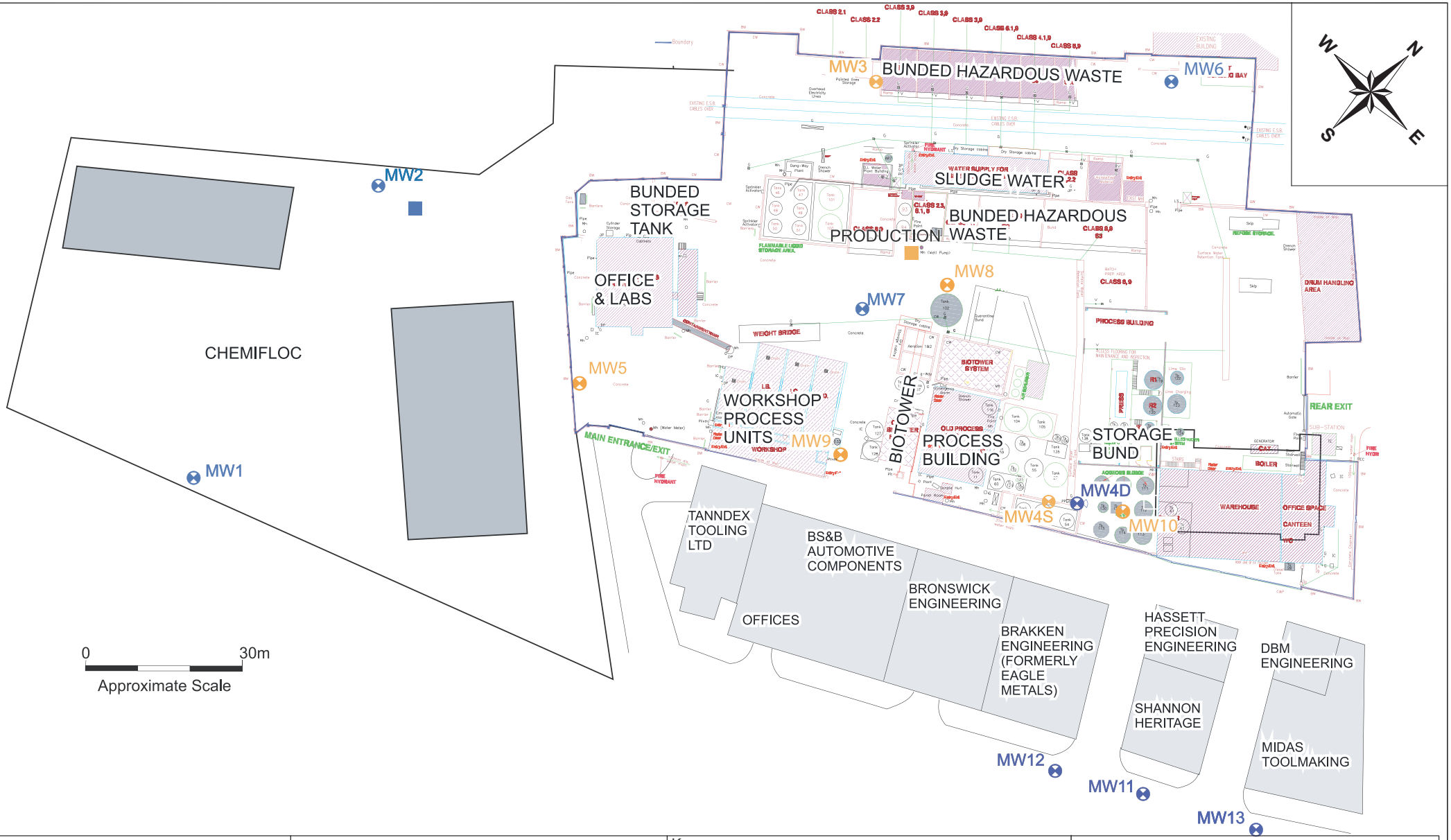
DRAWING TITLE

FIGURE 1 - SITE LOCATION PLAN

ENVIRONMENTAL CONSULTANTS

Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		FO'R	KF/COR	JUNE 2015
SCALE	Job No.			
AS SHOWN	47092963			A



CLIENT
ENVA IRELAND LIMITED

PROJECT LOCATION
SMITHSTOWN INDUSTRIAL ESTATE, SHANNON, CO. CLARE

DRAWING TITLE
FIGURE 2
SITE LAYOUT PLAN SHOWING BOREHOLE LOCATIONS JUNE 2015

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		KF	KF/CORK	JUNE 2015
SCALE N.T.S	Job No. 47092963			REV. A

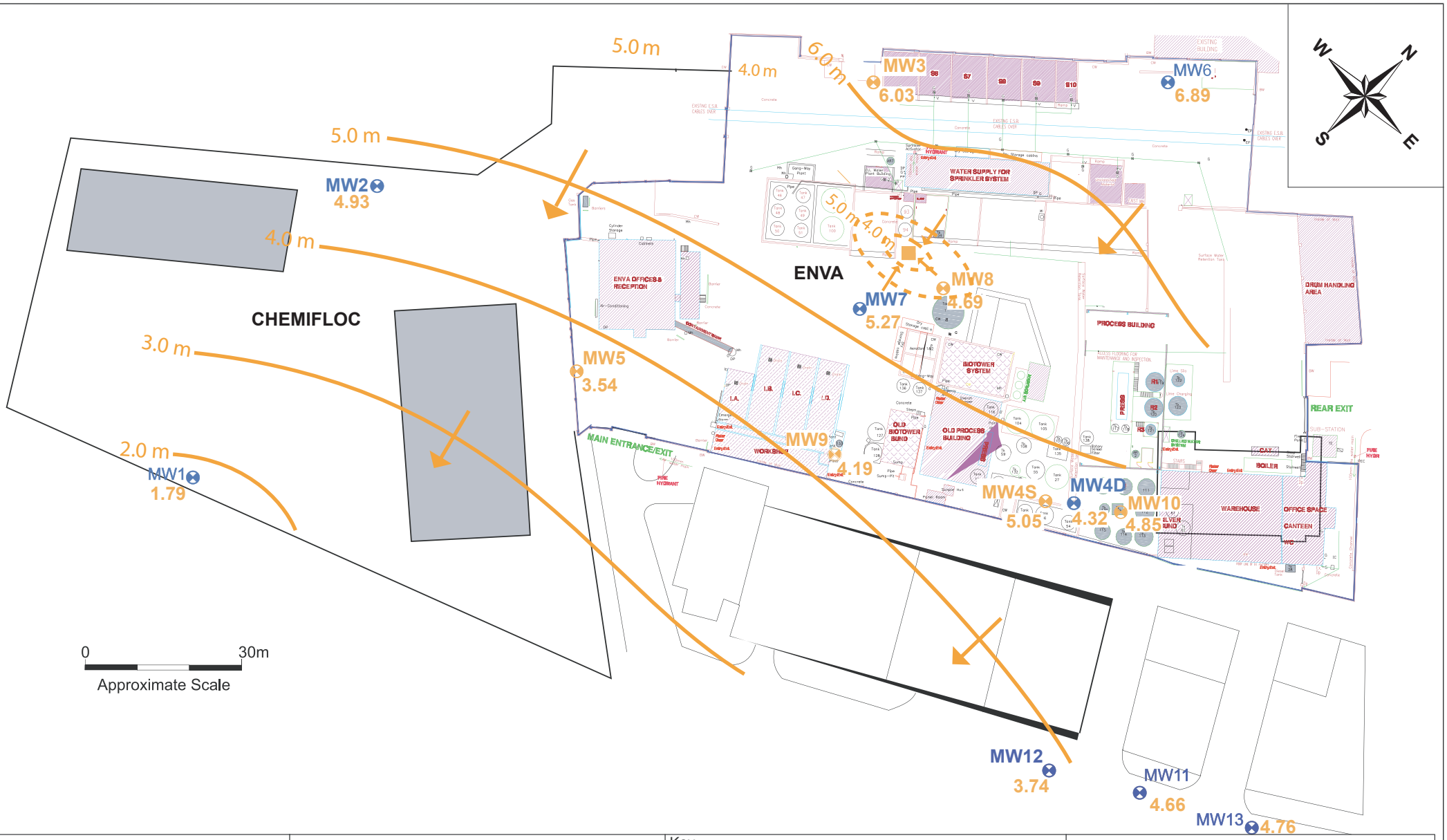
Key

- ENVA SITE BOUNDARY
- MW3 MONITORING WELL SAMPLED
- MW1 MONITORING WELL DIPPED
- SITE PRODUCTION WELL SAMPLED
- CHEMIFLOC PRODUCTION WELL (NOT SAMPLED)

ENVIRONMENTAL CONSULTANTS

AECOM

Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006



CLIENT	ENVA IRELAND LIMITED
PROJECT LOCATION	SMITHSTOWN INDUSTRIAL ESTATE, SHANNON, CO. CLARE
DRAWING TITLE	FIGURE 3 _GROUNDWATER CONTOUR PLAN (ENVA Q2 2015)

DRAWN	TRACED	CHECKED	APPROVED	DATE
FO'R		KF	KF/COR	JUNE 2015
SCALE	Job No.			REV.
As Shown	47092963			A

Key

- ENVA SITE BOUNDARY
- MW3 MONITORING WELL SAMPLED
- MW1 MONITORING WELL DIPPED
- SITE PRODUCTION WELL
- CHEMIFLOC PRODUCTION WELL
- 5.35 GROUNDWATER ELEVATION (m Above Site Datum)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION

ENVIRONMENTAL CONSULTANTS

AECOM

Douglas Business Centre
Carrigaline Road, Douglas Cork.
Tel 021 4365 006

Tables

Table 1: Sample Inventory - Enva Shannon, June 2015

Sampling Location	Field Parameters					Laboratory Parameters								
	pH	EC	Eh	T	DO	VOC	SVOCs	Total Hydrocarbons	Major Ions	Ammoniacal Nitrogen	Total Organic Carbon (TOC)	Total Oxidised Nitrogen (TON)	Cyclohexane Extractable Matter (SEM)	MNA Parameters
MW3	x	x	x	x	x	x	x	x	x	x	x	x	x	
MW4S	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MW5	x	x	x	x	x	x	x	x	x	x	x	x	x	
MW8	x	x	x	x	x	x								x
MW9	x	x	x	x	x	x								x
MW10	x	x	x	x	x	x								x
Production Well	x	x	x	x	x	x								x

Notes:

EC - Electrical Conductivity
Eh - Redox Potential
T - Temperature
DO - Dissolved Oxygen
VOC - Volatile Organic Compounds

Major Ions - to include Chloride, Sulphate, Potassium and Sodium
Total Hydrocarbons - specifically Diesel and Petrol Range Organics
Monitored Natural Attenuation (MNA) Parameters - Dissolved Iron, Dissolved Manganese, Nitrate, Nitrite, Chloride, Sulphate and Alkalinity

Compiled by: FO'R
Checked by: KF

Table 2: Water Level and Field Measurements - Enva Shannon, 11 June 2015

Sample Location	Sampling Date	SWL	Well Elevation	SWL	Total Depth	Well Volume	Minimum Purge Volume	Actual Purge Volume	pH	EC	Eh	T	DO	Observations
		mbtoc	mASD	mASD	m	L	L	L		µS/cm	mV	°C	mg/L	
MW1		9.010	10.80	1.79	12.19	--	--	--	--	--	--	--	--	--
MW2		6.125	11.05	4.93	8.55	--	--	--	--	--	--	--	--	--
MW3	11-Jun-15	4.689	10.72	6.03	12.22	15	44	45	6.64	1,553	114	12.6	2.27	Clear and colourless. No odour.
MW4S	11-Jun-15	6.004	11.05	5.05	10.33	8	25	20*	7.45	1,583	125	11.7	2.70	Clear and colourless. Chemical odour.
MW4D		6.675	10.99	4.32	26.46	--	--	--	--	--	--	--	--	--
MW5	11-Jun-15	7.038	10.57	3.54	12.36	10	31	20*	6.75	771	-34	12.9	3.13	Colourless. Hydrocarbon odour and sheen on water.
MW6		3.857	10.75	6.89	11.84	--	--	--	--	--	--	--	--	--
MW7		4.855	10.13	5.27	15.00	--	--	--	--	--	--	--	--	--
MW8	11-Jun-15	5.310	10.00	4.69	15.93	21	63	67	6.93	997	163	12.1	1.92	Cloudy brown water. No odour.
MW9	11-Jun-15	5.775	9.97	4.19	23.28	137	412	300	6.86	1,300	64	12.3	0.79	Slightly cloudy grey water. Slight hydrocarbon sheen on water, no odour.
MW10	11-Jun-15	6.138	10.99	4.85	17.14	22	65	66	7.02	961	193	11.3	5.05	Cloudy orange/brown water. No odour.
MW11		4.220	8.88	4.66	12.77	--	--	--	--	--	--	--	--	--
MW12		4.980	8.72	3.74	12.65	--	--	--	--	--	--	--	--	--
MW13		3.735	8.50	4.76	12.46	--	--	--	--	--	--	--	--	--
Production Well	11-Jun-15	--	--	--	--	--	--	--	7.36	732	144	13.1	1.50	Clear and colourless. No odour.

Notes:

SWL - standing water level
mASD - metres above site datum
mbtoc - metres below top of casing
-- Not Measured
NEC - No Evidence of Contamination

EC - Electrical Conductivity
Eh - Redox Potential
T - Temperature
DO - Dissolved Oxygen

µS/cm - micro Siemens per centimetre
mV - millivolts
°C - degrees centigrade
mg/L - milligrams per litre

Note redox potential readings compensated by adding 200 mV to field readings as recommended by instrument manufacturer

* Well purged dry before three well volumes were purged - well sampled upon recovery and field readings taken from standing water

Compiled by: FO'R
Checked by: KF

Table 3: Volatile Organic Compound Results (µg/L) - Enva Shannon, June 2015

Volatile Organic Compound	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	MW3	MW4S	MW5	MW8	MW9	MW10	Production Well
Dichlorodifluoromethane	2	nv	nv	-	-	-	-	-	-	-
Methyl Tertiary Butyl Ether	0.1	nv	30	-	-	-	-	4	-	-
Chloromethane	3	nv	nv	-	-	-	-	-	-	-
Vinyl Chloride	0.1	0.375	nv	**9**	**201**	-	**20**	**128**	**9**	**5**
Bromomethane	1	nv	nv	-	-	-	-	-	-	-
Chloroethane	3	nv	nv	-	-	-	-	41	-	-
Trichlorofluoromethane	3	nv	nv	-	3	-	-	-	-	-
1,1-Dichloroethene	3	nv	30*	4	12	-	-	9	4	8
Dichloromethane	3	nv	10	-	*13*	-	-	8	-	-
trans-1-2-Dichloroethene	3	nv	30*	-	4	-	-	-	-	-
1,1-Dichloroethane	3	nv	nv	41	103	-	4	136	23	22
cis-1-2-Dichloroethene	3	nv	30*	7	*989*	-	*136*	*377*	19	*270*
2,2-Dichloropropane	1	nv	nv	-	-	-	-	-	-	-
Bromochloromethane	2	nv	nv	-	-	-	-	-	-	-
Chloroform	2	75 [1]	12	-	8	-	-	3	-	-
1,1,1-Trichloroethane	2	nv	500	-	237	-	-	-	-	-
1,1-Dichloropropene	3	nv	nv	-	-	-	-	-	-	-
Carbon tetrachloride	2	nv	2	-	-	-	-	-	-	-
1,2-Dichloroethane	2	2	3	-	-	-	-	-	-	-
Benzene	0.5	0.75	1	-	***3***	-	-	-	-	-
Trichloroethene	3	7.5 [2]	10, 70**	3	-	-	***41***	***28***	-	***165***
1,2-Dichloropropane	2	nv	nv	-	-	-	-	-	-	-
Dibromomethane	3	nv	nv	-	-	-	-	-	-	-
Bromodichloromethane	2	75 [1]	nv	-	-	-	-	-	-	-
cis-1-3-Dichloropropene	2	nv	nv	-	-	-	-	-	-	-
Toluene	0.5	nv	10	-	7	-	-	-	-	-
trans-1-3-Dichloropropene	2	nv	nv	-	-	-	-	-	-	-
1,1,2-Trichloroethane	2	nv	nv	-	-	-	-	-	-	-
Tetrachloroethene	3	7.5 [2]	10, 40***	-	4	-	***56***	**7**	-	***158***
1,3-Dichloropropane	2	nv	nv	-	-	-	-	-	-	-
Dibromochloromethane	2	75 [1]	nv	-	-	-	-	-	-	-
1,2-Dibromoethane	2	nv	nv	-	-	-	-	-	-	-
Chlorobenzene	2	nv	1	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	2	nv	nv	-	-	-	-	-	-	-
Ethylbenzene	0.5	nv	10	-	6	-	-	-	-	-
p/m-Xylene	1	nv	10****	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10****	-	4	-	-	-	-	-
Styrene	2	nv	nv	-	-	-	-	-	-	-
Bromoform	2	75 [1]	nv	-	-	-	-	-	-	-
Isopropylbenzene	3	nv	nv	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	4	nv	nv	-	-	-	-	-	-	-
Bromobenzene	2	nv	nv	-	-	-	-	-	-	-
1,2,3-Trichloropropane	3	nv	nv	-	-	-	-	-	-	-
Propylbenzene	3	nv	nv	-	-	-	-	-	-	-
2-Chlorotoluene	3	nv	nv	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	17	-	-	-	-
4-Chlorotoluene	3	nv	nv	-	-	-	-	-	-	-
tert-Butylbenzene	3	nv	nv	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-
sec-Butylbenzene	3	nv	nv	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-
1,3-Dichlorobenzene	3	nv	nv	-	-	-	-	-	-	-
1,4-Dichlorobenzene	3	nv	nv	-	-	-	-	-	-	-
n-Butylbenzene	3	nv	nv	-	-	-	-	-	-	-
1,2-Dichlorobenzene	3	nv	10	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	2	nv	nv	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	3	nv	0.4*****	-	-	-	-	-	-	-
Hexachlorobutadiene	3	nv	0	-	-	-	-	-	-	-
Naphthalene	2	nv	1	-	-	7	-	-	-	-
1,2,3-Trichlorobenzene	3	nv	0.4*****	-	-	-	-	-	-	-
Total Tetrachloroethene & Trichloroethene	-	7.5 [2]	nv	3	4	-	**97**	**35**	-	**323**

Notes:

BOLD	Exceeds GTV	*Draft IGV is for the sum of dichloroethenes
Italics	Exceeds Draft IGV	**Two Draft IGVs are given for trichloroethene
MDL	Method Detection Limit	***Two Draft IGVs are given for tetrachloroethene
-	Less than the MDL	****Draft IGV is for the sum of xylenes
nv	No value	*****Draft IGV is for the sum of trichlorobenzenes

[1]GTV is for the sum of trihalomethanes.
[2]GTV is for the sum of tetrachloroethene and trichloroethene.

Prepared by: FO'R
Checked by: KF

Table 4: Semi - Volatile Organic Compound Results (µg/L) - Enva Shannon, June 2015

Semi Volatile Organic Compound	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well		
				MW3	MW4S	MW5
Phenols						
2-Chlorophenol	1	nv	200	-	-	-
2-Methylphenol	0.5	nv	0.5 [1]	-	-	-
2-Nitrophenol	0.5	nv	0.5 [1]	-	-	-
2,4-Dichlorophenol	0.5	nv	0.5 [1]	-	*11*	-
2,4-Dimethylphenol	1	nv	0.5 [1]	-	-	-
2,4,5-Trichlorophenol	0.5	nv	0.5 [1]	-	-	-
2,4,6-Trichlorophenol	1	nv	200	-	-	-
4-Chloro-3-methylphenol	0.5	nv	0.5 [1]	-	-	-
4-Methylphenol	1	nv	0.5 [1]	-	-	-
4-Nitrophenol	10	nv	0.5 [1]	-	-	-
Pentachlorophenol	1	nv	2	-	-	-
Phenol	1	nv	0.5 [1]	-	-	-
PAHs				-	-	
2-Chloronaphthalene	1	nv	nv	-	-	-
2-Methylnaphthalene	1	nv	nv	-	-	7
Naphthalene	1	nv	1	-	-	*11*
Acenaphthylene	0.5	nv	nv	-	-	-
Acenaphthene	1	nv	nv	-	-	-
Fluorene	0.5	nv	nv	-	-	-
Phenanthrene	0.5	nv	nv	-	-	-
Anthracene	0.5	nv	10000	-	-	-
Fluoranthene	0.5	nv	1	-	-	-
Pyrene	0.5	nv	nv	-	-	-
Benz(a)anthracene	0.5	nv	nv	-	-	-
Chrysene	0.5	nv	nv	-	-	-
Benzo(bk)fluoranthene	1	0.075 [A]	0.5, 0.05****	-	-	-
Benzo(a)pyrene	1	0.0075	0.01	-	-	-
Indeno(123cd)pyrene	1	0.075 [A]	0.05	-	-	-
Dibenzo(ah)anthracene	0.5	nv	nv	-	-	-
Benzo(ghi)perylene	0.5	0.075 [A]	0.05	-	-	-
Phthalates						
Bis(2-ethylhexyl) phthalate	5	nv	8	-	-	-
Butylbenzyl phthalate	1	nv	5 [2]	-	-	-
Di-n-butyl phthalate	1.5	nv	2	-	-	-
Di-n-Octyl phthalate	1	nv	5 [2]	-	-	-
Diethyl phthalate	1	nv	5 [2]	-	-	-
Dimethyl phthalate	1	nv	5 [2]	-	-	-
Other SVOCs						
1,2-Dichlorobenzene	1	nv	10	-	-	-
1,2,4-Trichlorobenzene	1	nv	0.4	-	-	-
1,3-Dichlorobenzene	1	nv	nv	-	-	-
1,4-Dichlorobenzene	1	nv	nv	-	-	-
2-Nitroaniline	10	nv	nv	-	-	-
2,4-Dinitrotoluene	0.5	nv	nv	-	-	-
2,6-Dinitrotoluene	10	nv	nv	-	-	-
3-Nitroaniline	10	nv	nv	-	-	-
4-Bromophenylphenylether	1	nv	nv	-	-	-
4-Chloroaniline	10	nv	nv	-	-	-
4-Chlorophenylphenylether	1	nv	nv	-	-	-
4-Nitroaniline	0.5	nv	nv	-	-	-
Azobenzene	0.5	nv	nv	-	-	-
Bis(2-chloroethoxy)methane	0.5	nv	nv	-	-	-
Bis(2-chloroethyl)ether	1	nv	nv	-	-	-
Carbazole	0.5	nv	nv	-	-	-
Dibenzofuran	0.5	nv	nv	-	-	-
Hexachlorobenzene	1	nv	0.03	-	-	-
Hexachlorobutadiene	1	nv	0.1	-	-	-
Hexachlorocyclopentadiene	10	nv	nv	-	-	-
Hexachloroethane	1	nv	nv	-	-	-
Isophorone	0.5	nv	nv	-	-	-
N-nitrosodi-n-propylamine	0.5	nv	nv	-	-	-
Nitrobenzene	1	nv	10	-	-	-

Notes:

BOLD	Exceeds GTV	1 - Draft IGV is for the sum of phenols
Italics	Exceeds Draft IGV	2 - Draft IGV is for the sum of phthalates
MDL	Method Detection Limit	
-	Less than the MDL	
nv	No value	A - PAH compounds specified in GTV

Prepared by: FO'R
Checked by: KF

Table 5: Hydrocarbons (µg/L) - Enva Shannon, June 2015

Compound	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well						
				MW3	MW4S	MW5	MW8	MW9	MW10	Production Well
DRO/EPH										
DRO/EPH (C_8-C_{40})	10	nv	10	-	*150*	*1,380*	NA	NA	NA	NA
GRO										
GRO (C_4-C_{12})	100	nv	10	*40*	*607*	*694*	NA	NA	NA	NA
Total TPH (C_4-C_{40})	100	nv	10	*40*	*757*	*2,074*	NA	NA	NA	NA

Notes:

xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)
MDL	Method Detection Limit
-	Less than the MDL
NA	Not Analysed
nv	no value
ug/l	micrograms per litre

Table 6: Miscellaneous Parameters (mg/L) - Enva Shannon, June 2015

Compound	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well						
				MW3	MW4S	MW5	MW8	MW9	MW10	Production Well
Ammonium (NH_4)	-	0.175	0.150	1.12	16.65	0.08	NA	NA	NA	NA
Ammoniacal Nitrogen as N	0.03	nv	nv	0.87	12.95	0.06	NA	NA	NA	NA
Chloride	0.3	24 - 187.5	30	***339***	***304***	***69***	***124***	***213***	***145***	***44***
Sulphate	0.05	187.5	200	126	166	30	139	111	95	84
Sodium	0.1	150	150	***152***	***277***	44	NA	NA	NA	NA
Potassium	0.1	nv	5	*7*	*14*	3	NA	NA	NA	NA
Total Oxidised Nitrogen as N	0.2	nv	No abnormal change	-	-	0.3	NA	NA	NA	NA
Total Organic Carbon	2	nv	No abnormal change	-	8	-	NA	NA	NA	NA
Cyclohexane Extractable Matter	1	nv	nv	-	60	80	NA	NA	NA	NA

Notes:

BOLD	Exceeds GTV
Italics	Exceeds Draft IGV
MRL	Method Detection Limit
-	Less than the MDL
nv	No value
*	Conversion factor of 1.2857 used to convert ammoniacal nitrogen (as N) to ammonium (NH_4)

Table 7: MNA Parameters (mg/L) - Enva Shannon, June 2015

Compound	MDL	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Monitoring Well						
				MW3	MW4S	MW5	MW8	MW9	MW10	Production Well
Chloride	0.3	24 - 187.5	30	***339***	***304***	***69***	***124***	***213***	***145***	***44***
Sulphate	0.05	187.5	200	126	166	30	139	111	95	84
Iron	0.02	nv	0.2	NA	*2.83*	NA	0.03	*4.50*	*0.83*	*0.37*
Manganese	0.002	nv	0.05	NA	*1.95*	NA	*1.90*	*1.21*	*2.14*	*0.19*
Total Alkalinity as $CaCO_3$	1	nv	No Abnormal Change	NA	238	NA	268	268	266	306
Nitrate as NO_3	0.2	37.5	25	NA	0.3	NA	0.5	0.4	0.5	0.4
Nitrite as NO_2	0.02	37.5	0.1	NA	-	NA	-	-	-	-

Notes:

BOLD	Exceeds GTV
Italics	Exceeds Draft IGV
MRL	Method Detection Limit
-	Less than the MDL
nv	No value
NA	Not Analysed

Compiled by: FO'R
Checked by: KF

APPENDIX A - SCHEDULE OF ANALYSIS

Appendix A - Shannon Facility: The following table sets out the monitoring requirements of Waste Licence W0041-01 as detailed in Schedule F.3.

Parameter	Quarterly	Annually
Ammoniacal Nitrogen	✓	
Total Organic Carbon	✓	
Cyclohexane Extractable Matter	✓	
Volatile Organic Compounds (VOCs), including chlorinated solvents	✓	
Semi Volatile Organic Compounds (VOCs)	✓	
Total Petroleum Hydrocarbons (TPH)-DRO and PRO banding	✓	
Chloride	✓	
Total Oxidised Nitrogen	✓	
Sulphate	✓	
Potassium	✓	
Sodium	✓	
Phosphate		✓
Total Alkalinity		✓
Calcium		✓
Cyanide		✓
Cadmium		✓
Chromium		✓
Copper		✓
Iron		✓
Lead		✓
Magnesium		✓
Manganese		✓
Mercury		✓
Nickel		✓
Arsenic		✓
Total Dissolved Solids (TDS)-residue on evaporation		✓
Total Phenols		✓

APPENDIX B – VALIDATED LABORATORY RESULTS

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

AECOM
Acorn Business Campus
Mahon Industrial Park
Black Rock
Cork
Ireland

Attention :	Fergus O'Regan
Date :	19th June, 2015
Your reference :	47092963
Our reference :	Test Report 15/8659 Batch 1
Location :	Shannon
Date samples received :	12th June, 2015
Status :	Final report
Issue :	1

Seven samples were received for analysis on 12th June, 2015 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: AECOM
Reference: 47092963
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/8659

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-5	6-11	12-16	17-18	19-20	21-22	23-24				LOD/LOR	Units	Method No.
Sample ID	MW 3	MW 4S	MW 5	MW 8	MW 9	MW 10	PRODUCTION WELL						
Depth													
COC No / misc													
Containers	V H P G	V H HN P G	V H P G	HN P	HN P	HN P	HN P						
Sample Date	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015						
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015						
Total Dissolved Iron #	-	2827	-	32	4501	826	372				<20	ug/l	TM30/PM14
Dissolved Manganese #	-	1949	-	1899	1206	2139	193				<2	ug/l	TM30/PM14
Dissolved Potassium #	6.6	14.4	2.6	-	-	-	-				<0.1	mg/l	TM30/PM14
Dissolved Sodium #	151.7	276.5$_{AA}$	44.3	-	-	-	-				<0.1	mg/l	TM30/PM14
EPH (C8-C40) #	<10	150	1380	-	-	-	-				<10	ug/l	TM5/PM30
GRO (>C4-C8) #	40	522	16	-	-	-	-				<10	ug/l	TM36/PM12
GRO (>C8-C12) #	<10	85	678	-	-	-	-				<10	ug/l	TM36/PM12
GRO (>C4-C12) #	40	607	694	-	-	-	-				<10	ug/l	TM36/PM12
Sulphate #	126.39	165.56	29.81	138.56	111.47	95.29	83.91				<0.05	mg/l	TM38/PM0
Chloride #	339.3	304.2	69.4	123.8	212.9	144.7	44.0				<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	-	0.3	-	0.5	0.4	0.5	0.4				<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	-	<0.02	-	<0.02	<0.02	<0.02	<0.02				<0.02	mg/l	TM38/PM0
Total Oxidised Nitrogen as N #	<0.2	<0.2	0.3	-	-	-	-				<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	0.87	12.95	0.06	-	-	-	-				<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	-	238	-	268	268	266	306				<1	mg/l	TM75/PM0
SEM	<1	60	80	-	-	-	-				<1	mg/l	TM7/PM9
Total Organic Carbon #	<2	8	<2	-	-	-	-				<2	mg/l	TM60/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: AECOM
Reference: 47092963
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/8659

SVOC Report : **Liquid**

J E Sample No.	1-5	6-11	12-16									
Sample ID	MW 3	MW 4S	MW 5									
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V H P G	V H HN P G	V H P G									
Sample Date	11/06/2015	11/06/2015	11/06/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	12/06/2015	12/06/2015	12/06/2015									
SVOC MS										LOD/LOR	Units	Method No.
Phenols												
2-Chlorophenol #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	11.4	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1							<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1							<1	ug/l	TM16/PM30
Phenol	<1	<1	<1							<1	ug/l	TM16/PM30
PAHs												
2-Chloronaphthalene #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	7							<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	11							<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1							<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1							<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1							<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1							<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phthalates												
Bis(2-ethylhexyl) phthalate	<5	<5	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1							<1	ug/l	TM16/PM30

Client Name: AECOM
Reference: 47092963
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/8659

SVOC Report : **Liquid**

J E Sample No.	1-5	6-11	12-16									
Sample ID	MW 3	MW 4S	MW 5									
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V H P G	V H HN P G	V H P G									
Sample Date	11/06/2015	11/06/2015	11/06/2015									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	12/06/2015	12/06/2015	12/06/2015									
SVOC MS										LOD/LOR	Units	Method No.
Other SVOCs												
1,2-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1							<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	90	81	86							<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	95	91	89							<0	%	TM16/PM30

Client Name: AECOM
Reference: 47092963
Location: Shannon
Contact: Fergus O'Regan
JE Job No.: 15/8659

VOC Report : **Liquid**

J E Sample No.	1-5	6-11	12-16	17-18	19-20	21-22	23-24				LOD/LOR	Units	Method No.
Sample ID	MW 3	MW 4S	MW 5	MW 8	MW 9	MW 10	PRODUCTION WELL						
Depth													
COC No / misc													
Containers	V H P G	V H HN P G	V H P G	HN P	HN P	HN P	HN P						
Sample Date	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015	11/06/2015						
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015						
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	3.6	<0.1	<0.1				<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Vinyl Chloride #	9.2	200.8	<0.1	19.8	128.2	8.5	4.6				<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1				<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	41	<3	<3				<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	4	12	<3	<3	9	4	8				<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	13	<3	<3	8	<3	<3				<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	4	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,1-Dichloroethane #	41	103	<3	4	136	23	22				<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	7	989	<3	136	377	19	270				<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1				<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Chloroform #	<2	8	<2	<2	3	<2	<2				<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	237	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Benzene #	<0.5	3.4	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	3	<3	<3	41	28	<3	165				<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Toluene #	<0.5	7.3	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	4	<3	56	7	<3	158				<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	6.0	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1	<1	<1	<1				<1	ug/l	TM15/PM10
o-Xylene #	<0.5	3.7	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4				<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	17	<3	<3	<3	<3				<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Naphthalene	<2	<2	7	<2	<2	<2	<2				<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3				<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	93	89	93	91	90	91	88				<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	95	95	95	95	97	89	87				<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 15/8659

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

JE Job No: 15/8659

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM7	Modified USEPA 3540 and 9071 for oily wastes. In house method for the gravimetric determination of a sample following solvent extraction.	PM9	Extraction of organic determinands from a water/leachate sample by mixing with an organic solvent.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes			
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.	Yes			

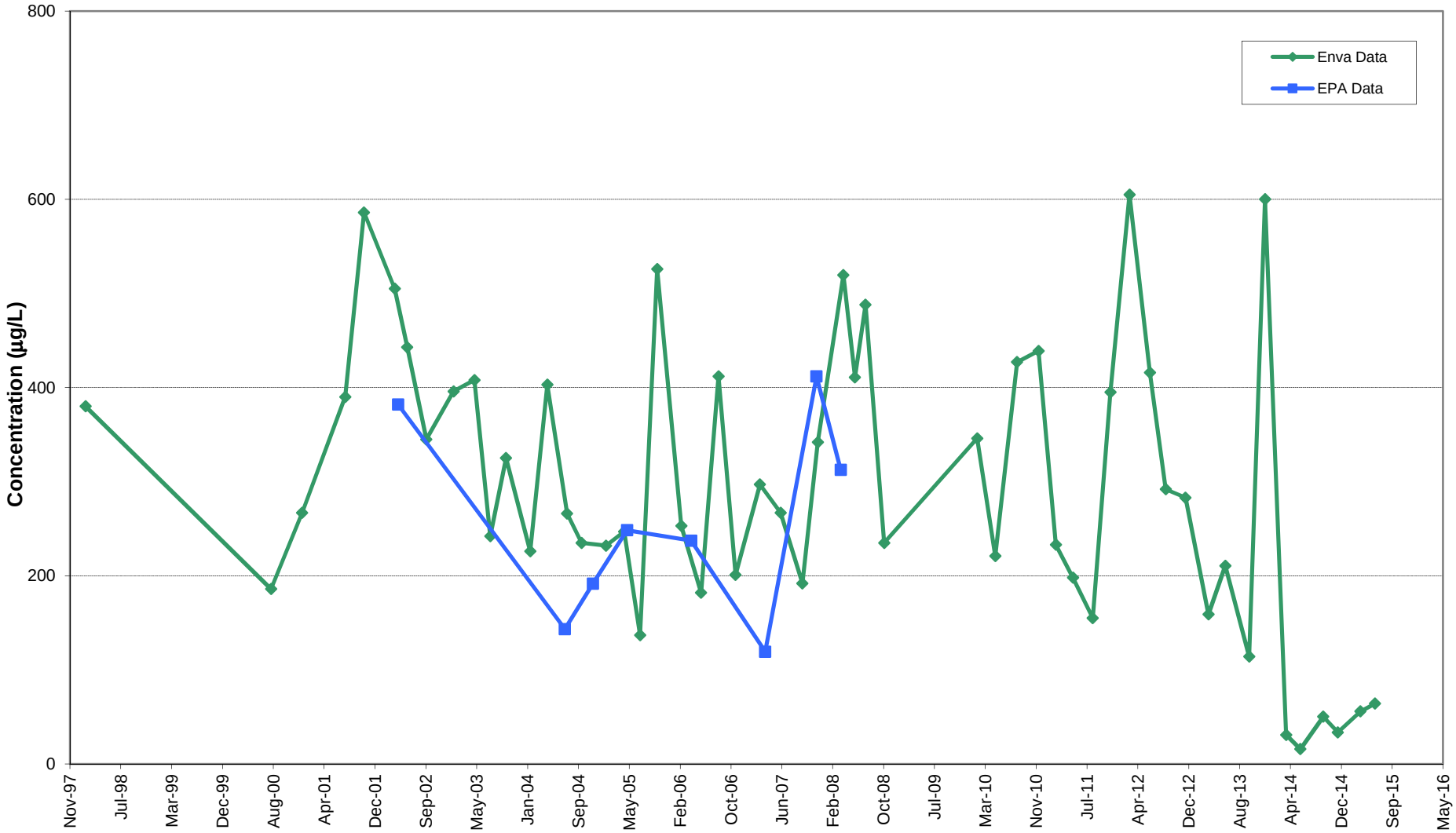
JE Job No: 15/8659

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM75	Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			

APPENDIX C - MONITORED NATURAL ATTENUATION MONITORING VOC DATA

Appendix C1: Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Total VOC Concentration - MW3
(Maximum Total VOC Concentration = 605 ug/L in February 2012)



Appendix C1 - VOC Summary MW3, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03
Vinyl Chloride	1	0.375	nv	-	-	-	-	**4**	**9**	<0.5	**5**	**5**	**3**	**5**	**5**	**5**
1,1-Dichloroethene	1	nv	30	-	-	-	-	-	-	13	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	5	-	14	20	**36**	**40**	**31**	**39**	**30**	**40**	**31**	25	**37**
trans-1,2-Dichloroethene	1	nv	nv	12	9	15	20	31	30	<0.5	25	21	-	28	18	23
Trichloroethene	1	7.5	10	-	5	5	7	**11**	**12**	**9.6**	**11**	**14**	**14**	**18**	**13**	**15**
Tetrachloroethene	1		10	n/a	-	-	-	-	-	**1.5**	**1**	-	-	-	-	-
Chloroethane	1	nv	nv	-	-	-	-	-	-	n/a	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	133	107	128	151	241	215	250	185	181	167	205	102	140
1,2-Dichloroethane	1	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	81	65	105	192	253	195	77	171	87	172	121	79	105
Dichloromethane	1	nv	10	**149**	-	-	-	-	-	<0.5	-	-	-	-	-	-
Chloroform	1	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Tetrachloromethane	1	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
tert-butyl methyl ether	1	nv	30	**n/a**	**n/a**	**n/a**	-	4	4	n/a	6	7	-	-	-	-
Toluene	1	nv	10	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Ethylbenzene	1	nv	10	**n/a**	-	-	-	4	-	<0.5	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Benzene	1	0.75	1	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Total xylene	1	nv	10	-	-	-	-	-	-	<0.5	-	-	-	-	-	-
Total VOC Concentration				**380**	**186**	**267**	**390**	**586**	**505**	**382**	**443**	**345**	**396**	**408**	**242**	**325**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C1 - VOC Summary MW3, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Jan-04	Apr-04	Jul-04	Jul-04	Oct-04	Nov-04	Feb-05	May-05	May-05	Jul-05	Oct-05
Vinyl Chloride	1	0.375	nv	**3**	-	<0.5	**6**	**9**	**12**	**7**	<0.5	**6**	-	**13**
1,1-Dichloroethene	1	nv	30	-	-	<0.5	-	-	8.1	-	7.6	-	-	-
cis-1,2-Dichloroethene	1	nv	30	28	**66**	21.3	**34**	29	**34**	**30**	27.2	27	19	**55**
trans-1,2-Dichloroethene	1	nv	nv	16	24	<0.5	24	20	1.5	20	<0.5	15	-	19
Trichloroethene	1	7.5	10	**11**	**12**	**8.5**	**14**	**10**	6.8	**11**	**8.2**	**11**	-	**30**
Tetrachloroethene	1		10	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
Chloroethane	1	nv	nv	-	-	n/a	-	-	n/a	-	n/a	-	-	-
1,1-Dichloroethane	1	nv	nv	107	224	87.3	139	119	100	119	150	126	87	158
1,2-Dichloroethane	1	nv	nv	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
1,1,1-Trichloroethane	1	nv	500	61	77	26.3	49	48	28	45	53.1	62	31	63
Dichloromethane	1	nv	10	-	-	n/a	-	-	n/a	-	n/a	-	-	**188**
Chloroform	1	nv	nv	-	-	<0.5	-	-	n/a	-	2.3	-	-	-
Tetrachloromethane	1	nv	nv	-	-	<0.5	-	-	0.8	-	<0.5	-	-	-
tert-butyl methyl ether	1	nv	30	-	-	n/a	-	-	n/a	-	n/a	-	-	-
Toluene	1	nv	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Ethylbenzene	1	nv	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Isopropylbenzene	1	nv	nv	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Benzene	1	0.75	1	-	-	<0.5	-	-	<0.7	-	<0.5	-	-	-
Total xylene	1	nv	10	-	-	<0.5	-	-	n/a	-	<0.5	-	-	-
Total VOC Concentration				**226**	**403**	**143**	**266**	**235**	**192**	**232**	**248**	**247**	**137**	**526**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C1 - VOC Summary MW3, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	Mar-06	May-06	Aug-06	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07
Vinyl Chloride	1	0.375	nv	-	<0.5	-	**17**	**16**	n/a	**12**	**8**	**8**	**12**	**16**
1,1-Dichloroethene	1	nv	30	-	14.5	15	27	-	12.4	-	15	-	13.2	11
cis-1,2-Dichloroethene	1	nv	30	**33**	**38.5**	-	**68**	**39**	**32.61**	**47**	**42**	25	22.5	26
trans-1,2-Dichloroethene	1	nv	nv	13	1.7	-	24	11	0.88	18	-	9	0.8	-
Trichloroethene	1	7.5	10	**12**	**14.1**	**9**	**12**	**11**	**20.66**	**13**	**10**	**8**	**9.9**	**9**
Tetrachloroethene	1		10	-	**0.34**	-	-	-	**0.34**	-	-	-	<0.5	-
Chloroethane	1	nv	nv	-	n/a	-	-	-	n/a	-	-	-	n/a	-
1,1-Dichloroethane	1	nv	nv	129	124	110	187	90	n/a	126	134	74	63.2	102
1,2-Dichloroethane	1	nv	nv	-	0.185	-	-	-	0.185	-	-	-	<0.5	-
1,1,1-Trichloroethane	1	nv	500	66	43.9	48	77	34	45.1	81	58	68	290.3	178
Dichloromethane	1	nv	10	-	<0.5	-	-	-	0.12	-	-	-	<0.5	-
Chloroform	1	nv	nv	-	0.138	-	-	-	0.138	-	-	-	<0.5	-
Tetrachloromethane	1	nv	nv	-	<0.5	-	-	-	6.906	-	-	-	<0.5	-
tert-butyl methyl ether	1	nv	30	-	n/a	-	-	-	n/a	-	-	-	<0.5	-
Toluene	1	nv	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Ethylbenzene	1	nv	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Isopropylbenzene	1	nv	nv	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Benzene	1	0.75	1	-	<0.5	-	-	-	<0.5	-	-	-	<0.5	-
Total xylene	1	nv	10	-	<0.5	-	-	-	0.6	-	-	-	0.6	-
Total VOC Concentration				**253**	**237**	**182**	**412**	**201**	**119**	**297**	**267**	**192**	**412**	**342**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C1 - VOC Summary MW3, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Apr-08	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10	Aug-10	Nov-10	Feb-11	May-11	Aug-11	Nov-11
Vinyl Chloride	1	0.375	nv	**22**	**25**	**27**	**18**	**10**	**4**	-	**6**	-	**11**	**7**	-	**4**
1,1-Dichloroethene	1	nv	30	13.6	23	14	29	11.2	17	**30**	20	21	11	8	10	8
cis-1,2-Dichloroethene	1	nv	30	n/a	**105**	**43**	**62.9**	**48.9**	**37**	**59**	**59**	**63**	**41**	**70**	**30**	23
trans-1,2-Dichloroethene	1	nv	nv	1.4	1.4	3.1	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	**21.9**	**27**	**17**	**25.3**	**32.8**	**12**	**21**	**27**	**30**	**22**	7	**8**	**10**
Tetrachloroethene	1		10	**1**	**1.7**	**1.7**	**2.4**	**9.5**	**20**	**18**	**13**	**18**	**15**	**9**	-	**8**
Chloroethane	1	nv	nv	n/a	-	1.4	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	102.4	126	105	134	65.6	69	93	94	91	56	38	50	41
1,2-Dichloroethane	1	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	148.5	209	199	215	54.7	187	-	208	216	77	58	53	301
Dichloromethane	1	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	1.5	1.4	-	2	-	-	-	-	-	-	-	-	-
Tetrachloromethane	1	nv	nv	<0.5	-	-	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
tert-butyl methyl ether	1	nv	30	<0.5	-	-	-	2	-	-	-	-	-	1	-	-
Toluene	1	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	4	-
Ethylbenzene	1	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	1	0.75	1	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Total xylene	1	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**313**	**520**	**411**	**488**	**235**	**346**	**221**	**427**	**439**	**233**	**198**	**155**	**395**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C1 - VOC Summary MW3, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-12	May-12	Aug-12	Nov-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15
Vinyl Chloride	1	0.375	nv	**61**	**7**	**3**	**-**	**3**	**7**	**13**	**6**	**2**	**2**	**11**	**4**	**6**	**9**
1,1-Dichloroethene	1	nv	30	9	10	6	8	8	7	-	-	-	-	-	23	5	4
cis-1,2-Dichloroethene	1	nv	30	**71**	**46**	**35**	**43**	**42**	**66**	**6**	**4**	-	-	-	-	-	7
trans-1,2-Dichloroethene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	**22**	**19**	**17**	**24**	**15**	**6**	-	-	-	**-**	-	-	-	3
Tetrachloroethene	1		10	**10**	**10**	-	**12**	**9**	**8**	-	-	-	-	-	-	-	-
Chloroethane	1	nv	nv	-	-	-	-	-	-	19	22	19	-	24	7	-	-
1,1-Dichloroethane	1	nv	nv	41	49	30	39	8	36	76	31	6	9	15	-	45	41
1,2-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-		-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	391	273	201	157	74	53	-	-	4	4	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	**496**	-	-	-	-	-	-
Chloroform	1	nv	nv	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-			-	-
tert-butyl methyl ether	1	nv	30	-	-	-	-	-	1.5	-	2	-	0.5	-	-	-	-
Toluene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1	nv	10	-	-	-	-	-	5	-	7	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	1	0.75	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total xylene	1	nv	10	-	-	-	-	-	**21**	-	**32**	-	-	-	-	-	-
Total VOC Concentration				**605**	**416**	**292**	**283**	**159**	**211**	**114**	**600**	**31**	**16**	**50**	**34**	**56**	**64**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

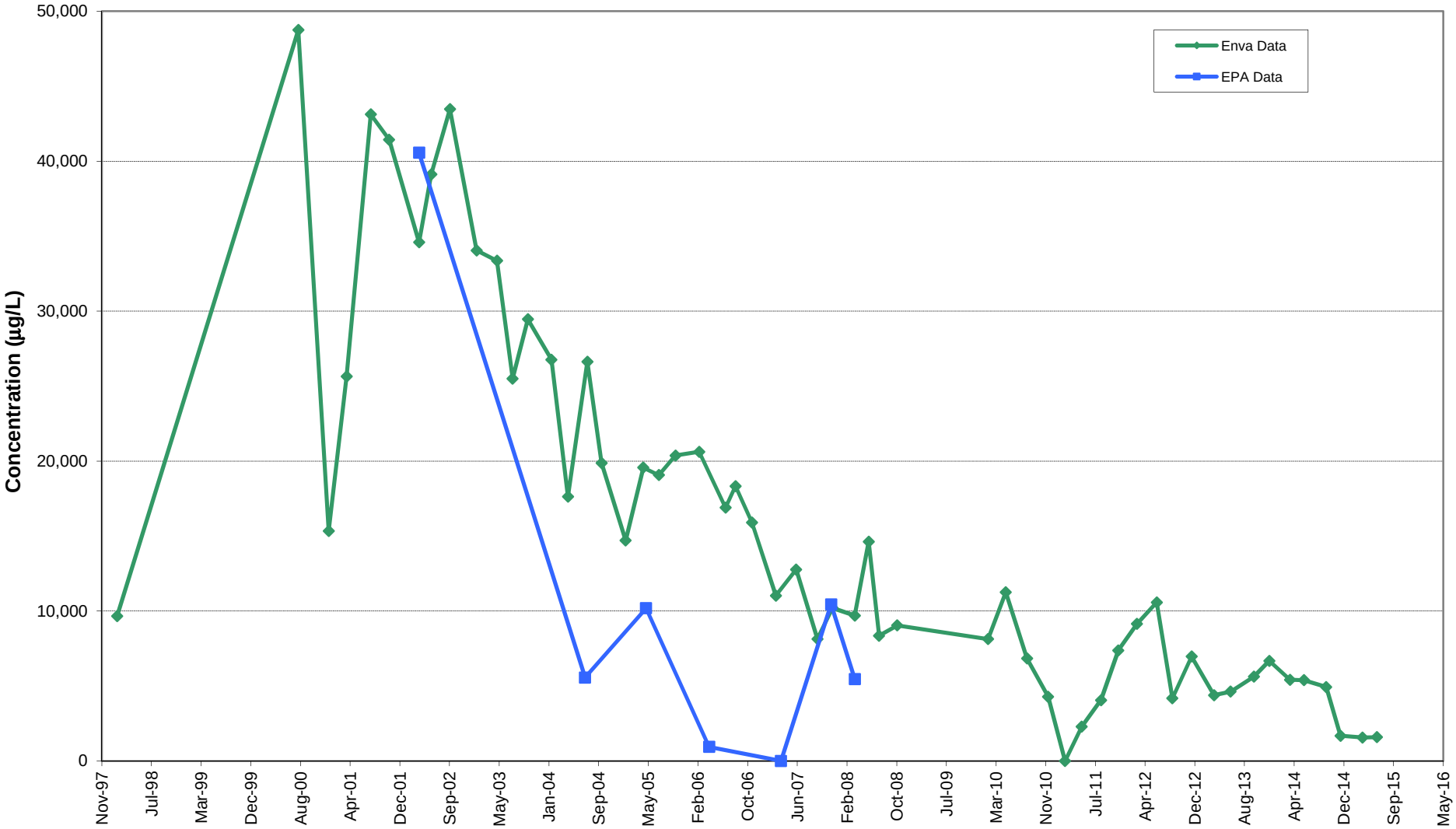
Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C2: Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Total VOC Concentration - MW4S
(Maximum Total VOC Concentration = 48,749 ug/L in August 2000)



Appendix C2 - VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Apr-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03
Vinyl Chloride	1	0.375	nv	**136**	**2,113**	**768**	**1,061**	**1,477**	**994**	-	**1,072**	**918**	**772**	**756**	**648**	**660**	**698**
1,1-Dichloroethene	1	nv	30	-	**37**	16	n/a	**54**	**31**	**120**	**48**	**41**	-	**34**	**30**	25	29
cis-1,2-Dichloroethene	1	nv	30	**5,235**	**32,712**	**9,580**	**16,363**	**24,450**	**19,517**	>20,000	**15,520**	**17,466**	**22,995**	**16,634**	**17,878**	**12,492**	**14,514**
trans-1,2-Dichloroethene	1	nv	nv	-	198	75	n/a	283	223	55	234	308	270	-	248	272	324
Trichloroethene	1	7.5	10	**31**	**108**	**73**	n/a	**165**	**280**	**120**	**134**	**121**	**158**	**222**	**89**	**100**	**97**
Tetrachloroethene	1	7.5	10	n/a	**84**	**41**	n/a	**141**	**57**	**160**	**213**	**310**	**294**	**123**	**199**	**197**	**184**
Chloroethane	1	nv	nv	-	313	62	n/a	-	-	n/a	-	18	-	12	-	-	-
1,1-Dichloroethane	1	nv	nv	543	2,946	935	1,691	2,484	2,484	5,200	2,180	2,593	2,572	2,342	2,023	1,628	2,019
1,2-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	**2,413**	**7,395**	**2,596**	**4,331**	**8,902**	**11,744**	**9,900**	**10,155**	**12,461**	**11,708**	**10,280**	**9,832**	**8,094**	**9,716**
1,1,2-Trichloroethane	1	nv	nv	-	-	-	n/a	-	-	-	-	4	-	-	-	-	-
Dichloromethane	1	nv	10	**1,181**	**2,627**	**1,046**	**2,209**	**4,672**	**5,438**	**4,700**	**4,570**	**4,416**	**4,334**	**3,310**	**2,110**	**1,652**	**1,430**
Chloroform	1	75	12	**105**	-	**44**	n/a	**144**	**149**	**130**	**110**	**141**	**142**	**122**	**111**	**84**	**106**
Dichlorodifluoromethane	1	nv	nv	-	-	10	n/a	50	84	n/a	89	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	4	120	52	n/a	88	43	65	38	47	-	28	30	25	23
tert-butyl methyl ether	1	nv	30	n/a	n/a	n/a	n/a	**106**	**125**	n/a	**67**	**98**	**69**	-	-	**46**	-
Benzene	1	0.75	1	-	**24**	**9**	n/a	**27**	**29**	**16**	**22**	**26**	**24**	**27**	**22**	**22**	**29**
Toluene	1	nv	10	**14**	**52**	**21**	n/a	**56**	**175**	**60**	**86**	**102**	**93**	**112**	**103**	**131**	**218**
Ethylbenzene	1	nv	10	n/a	7	3	n/a	6	**17**	9	**12**	**14**	9	**11**	9	**15**	**16**
p/m-Xylene	1	nv	10	n/a	**10**	5	n/a	**10**	**32**	**19**	**27**	**29**	**18**	**26**	**17**	**40**	**38**
o-Xylene	1	nv	10	n/a	3	2	n/a	4	**12**	9	9	**12**	8	**13**	**11**	**19**	**18**
Chlorobenzene	1	nv	nv	n/a	-	-	n/a	-	2	-	2	2	-	1	2	2	-
Isopropylbenzene	1	nv	nv	n/a	-	-	n/a	-	-	-	-	-	-	-	-	1	-
1,2,4-Trimethylbenzene	1	nv	nv	n/a	-	-	n/a	-	-	2	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	1	nv	nv	n/a	-	-	n/a	-	-	1	-	-	-	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	n/a	-	-	n/a	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**9,662**	**48,749**	**15,338**	**25,655**	**43,119**	**41,436**	**40,566**	**34,588**	**39,127**	**43,466**	**34,053**	**33,362**	**25,505**	**29,459**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

++ Result outside calibration range, results should be considered as indicative only and are not accredited

Appendix C2 - VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Jan-04	Apr-04	Jul-04	Jul-04	Oct-04	Feb-05	May-05	May-05	Jul-05	Oct-05	Feb-06	Mar-06	Jun-06	Aug-06	Nov-06
Vinyl Chloride	1	0.375	nv	**553**	**407**	-	**654**	**556**	**350**	-	**585**	**340**	**876**	**929**	**37**	**518**	**416**	**850**
1,1-Dichloroethene	1	nv	30	24	15	-	24	19	14	**140**	17	22	18	-	**33**	14	18	17
cis-1,2-Dichloroethene	1	nv	30	**13,133**	**9,182**	**304**	**14,736**	**10,426**	**7,604**	**1,300**	**10,574**	**11,596**	**11,445**	**9,468**	**492**	**11,093**	**12,041**	**9,386**
trans-1,2-Dichloroethene	1	nv	nv	293	213	-	-	209	197	-	197	155	225	183	2	15	163	198
Trichloroethene	1	7.5	10	**132**	**83**	-	**76**	**62**	**41**	**42**	**41**	**22**	**25**	-	5	**20**	**26**	**21**
Tetrachloroethene	1	7.5	10	**142**	**74**	-	**57**	**43**	**38**	**19**	**23**	**20**	**17**	-	1	**10**	**14**	**15**
Chloroethane	1	nv	nv	6	-	n/a	-	-	-	n/a	-	-	-	-	n/a	-	-	-
1,1-Dichloroethane	1	nv	nv	1,710	1,010	317	1,766	1,347	1,000	2,400	1,305	1,353	1,456	1,405	85	1,240	1,300	1,131
1,2-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1,1,1-Trichloroethane	1	nv	500	**9,183**	**5,944**	**4,950**	**8,363**	**6,518**	**4,926**	**5,000**	**6,450**	**5,198**	**5,858**	**5,497**	271	**3,592**	**3,749**	**3,904**
1,1,2-Trichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	**1,114**	**302**	-	**332**	-	**111**	**510**	-	**20**	-	-	-	-	-	-
Chloroform	1	75	12	**91**	**62**	-	**87**	**69**	**49**	**93**	**67**	**77**	**72**	-	4	**69**	**66**	**51**
Dichlorodifluoromethane	1	nv	nv	-	-	n/a	-	-	-	n/a	-	39	-	-	-	-	264	-
Trichlorofluoromethane	1	nv	nv	17	11	-	17	13	9	-	12	5	12	2,357	3	4	8	7
tert-butyl methyl ether	1	nv	30	-	-	n/a	-	-	-	n/a	22	22	-	-	n/a	-	**42**	-
Benzene	1	0.75	1	**29**	**19**	-	**31**	**27**	**23**	**28**	**29**	**29**	**41**	**48**	**1**	**59**	**37**	**48**
Toluene	1	nv	10	**271**	**250**	-	**424**	**492**	**276**	**660**	**199**	**167**	**273**	**734**	7	**170**	**156**	**177**
Ethylbenzene	1	nv	10	**14**	**11**	-	**13**	**13**	**14**	-	**11**	8	**12**	-	-	**20**	7	**20**
p/m-Xylene	1	nv	10	**34**	**29**	-	**31**	**61**	**37**	-	**25**	-	**28**	-	-	**47**	**18**	**55**
o-Xylene	1	nv	10	**19**	**15**	-	**16**	**17**	**20**	-	**13**	-	**13**	-	2	**22**	**11**	**28**
Chlorobenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
1,2,4-Trimethylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**26,765**	**17,627**	**5,571**	**26,627**	**19,872**	**14,709**	**10,193**	**19,570**	**19,073**	**20,371**	**20,621**	**945**	**16,893**	**18,336**	**15,908**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

++ Result outside calibration range, results should be considered as indicative only and are not accredited

Appendix C2 - VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07	Apr-08	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10	Aug-10	Nov-10
Vinyl Chloride	1	0.375	nv	n/a	**734**	**261**	**227**	**298**	**472**	**438**	**496**	**535**	**346**	**669**	**502**	**1,461**	**278**	**424**
1,1-Dichloroethene	1	nv	30	-	12	14	8	**76**	**99**	**149**	**96**	**162**	**127**	**85**	**80**	**96**	**61**	**38**
cis-1,2-Dichloroethene	1	nv	30	0	**6,888**	**8,512**	**4,970**	**5,730**	**5,720**	n/a	**5,700**	**8,160**	**4,500**	**5,010**	**4,830**	**7,218**	**4,777**	**2,638**
trans-1,2-Dichloroethene	1	nv	nv	-	-	114	80	16	-	17	-	361	-	361	9	13	8	-
Trichloroethene	1	7.5	10	1	**29**	**23**	**13**	**22**	**90**	**138**	-	**91**	**45**	**30**	**26**	**59**	**21**	7
Tetrachloroethene	1	7.5	10	0	-	**14**	**11**	**18**	-	**20**	-	<40	**20**	-	**11**	**14**	7	-
Chloroethane	1	nv	nv	n/a	-	-	-	n/a	-	n/a	-	<40	-	-	4	-	7	-
1,1-Dichloroethane	1	nv	nv	n/a	793	1,026	576	697	735	899	759	949	640	564	533	589	417	245
1,2-Dichloroethane	1	nv	nv	-	-	-	-	6	-	5	-	<40	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	6	**2,281**	**2,640**	**2,154**	**3,345**	**2,850**	**3,219**	**2,650**	**4,190**	**2,440**	**2,050**	**1,623**	**1,463**	**1,055**	**757**
1,1,2-Trichloroethane	1	nv	nv	-	-	-	-	1	-	1	-	<40	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	1	-	2	-	<40	-	-	9	-	-	-
Chloroform	1	75	12	1	**34**	**49**	**41**	**85**	**81**	**165**	-	**129**	**92**	**83**	**95**	**78**	**58**	**31**
Dichlorodifluoromethane	1	nv	nv	n/a	-	-	-	66	-	172	-	<40	-	-	178	-	-	-
Trichlorofluoromethane	1	nv	nv	n/a	4	-	2	5	-	4	-	<40	-	-	19	23	17	14
tert-butyl methyl ether	1	nv	30	n/a	-	-	-	n/a	-	n/a	-	<40	-	27	-	**60**	28	11
Benzene	1	0.75	1	n/a	**33**	**28**	**19**	**24**	-	**44**	-	<40	**24**	**24**	**17**	**16**	**12**	**10**
Toluene	1	nv	10	-	**180**	**67**	**19**	**35**	**161**	**133**	-	**56**	**77**	**125**	**118**	**98**	**71**	**74**
Ethylbenzene	1	nv	10	-	-	2	6	n/a	-	**25**	-	<40	**23**	**20**	**21**	**20**	6	**12**
p/m-Xylene	1	nv	10	-	**28**	**10**	7	6	-	**18**	-	<40	-	-	**39**	**17**	8	**14**
o-Xylene	1	nv	10	-	**17**	9	9	**18**	-	**24**	-	<40	**21**	-	**22**	**24**	**11**	**17**
Chlorobenzene	1	nv	nv	-	-	-	-	1	-	1	-	<40	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	-	-	-	-	1	-	-	-	<40	-	-	-	-	-	-
1,2,4-Trimethylbenzene	1	nv	nv	-	-	-	-	1	-	-	-	<40	-	-	-	-	-	-
1,3,5-Trimethylbenzene	1	nv	nv	-	-	-	-	1	-	-	-	<40	-	-	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	-	-	-	-	1	-	-	-	<40	-	-	-	-	-	-
Total VOC Concentration				**9**	**11,033**	**12,769**	**8,142**	**10,450**	**10,208**	**5,472**	**9,701**	**14,633**	**8,355**	**9,047**	**8,136**	**11,249**	**6,842**	**4,292**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

++ Result outside calibration range, results should be considered as indicative only and are not accredited

Appendix C2 - VOC Summary MW4S, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-11	May-11	Aug-11	Nov-11	Feb-12	May-12	Aug-12	Nov-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15
Vinyl Chloride	1	0.375	nv	-	**324**	**530**	**619**	**2,198**	**908**	**298**	**1,177**	**389**	**658**	**811**	**722**	**406**	**594**	**930**	**356**	**412**	**201**
1,1-Dichloroethene	1	nv	30	-	18	**42**	**67**	**74**	**113**	**37**	**53**	**43**	**43**	**42**	**60**	**203**	-	**70**	20	-	12
cis-1,2-Dichloroethene	1	nv	30	-	**1,401**	**2,384**	**4,015**	**4,094**	**6,189**	**2,441**	**3,846**	**2,698**	**2,631**	**3,255**	**3,879**	**3,694**	**3,356**	**2,365**	**1,057**	**917**	**989**
trans-1,2-Dichloroethene	1	nv	nv	-	4	7	9	9	16	7	8	6	6	7	8	6	7	13	5	6	4
Trichloroethene	1	7.5	10	-	5	**24**	**39**	**49**	**48**	**30**	**12**	**13**	**6**	**10**	**19**	**17**	**13**	**6**	**-**	**-**	**13**
Tetrachloroethene	1	7.5	10	-	4	-	**10**	**11**	**43**	-	**9**	7	6	9	**9**	6	6	-	4	6	4
Chloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	160	361	504	-	-	-	-	350	293	395	393	203	315	419	175	168	103
1,2-Dichloroethane	1	nv	nv	-	-	-	-	461	681	316	412	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	-	337	**634**	**1,900**	**2,027**	**2,328**	**932**	**1,274**	**739**	**884**	**884**	**1,339**	**791**	**994**	**1,022**	-	-	237
1,1,2-Trichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	75	12	-	**18**	**40**	**99**	**96**	**108**	**49**	**80**	**50**	**40**	**51**	**-**	**29**	**37**	**35**	**17**	**13**	8
Dichlorodifluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	115	190	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	4	7	6	7	19	-	5	4	-	4	4	-	-	10	-	4	3
tert-butyl methyl ether	1	nv	30	-	7	13	14	10	13	5	5	5	6	5	6	5	6	11	3	-	-
Benzene	1	0.75	1	-	**3**	**9**	**17**	**14**	**18**	**10**	**12**	**13**	**10**	**12**	**13**	**7**	**10**	**11**	**6**	**5**	**3**
Toluene	1	nv	10	-	8	9	**14**	**41**	**43**	**23**	**14**	**32**	**10**	**11**	**16**	**18**	**15**	8	**22**	**13**	7
Ethylbenzene	1	nv	10	-	-	-	**21**	**20**	**17**	**16**	**21**	**17**	**16**	6	**11**	**14**	**19**	**19**	-	**10**	6
p/m-Xylene	1	nv	10	-	-	-	**15**	**12**	**12**	6	**15**	6	3	3	**4**	3	3	**2**	**11**	2	-
o-Xylene	1	nv	10	-	-	-	**27**	**23**	**22**	**15**	**27**	**17**	**20**	**5**	**10**	**15**	**17**	**17**	**7**	**10**	4
Chlorobenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**0**	**2,293**	**4,060**	**7,376**	**9,146**	**10,578**	**4,185**	**6,970**	**4,389**	**4,632**	**5,625**	**6,683**	**5,417**	**5,392**	**4,937**	**1,684**	**1,567**	**1,594**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

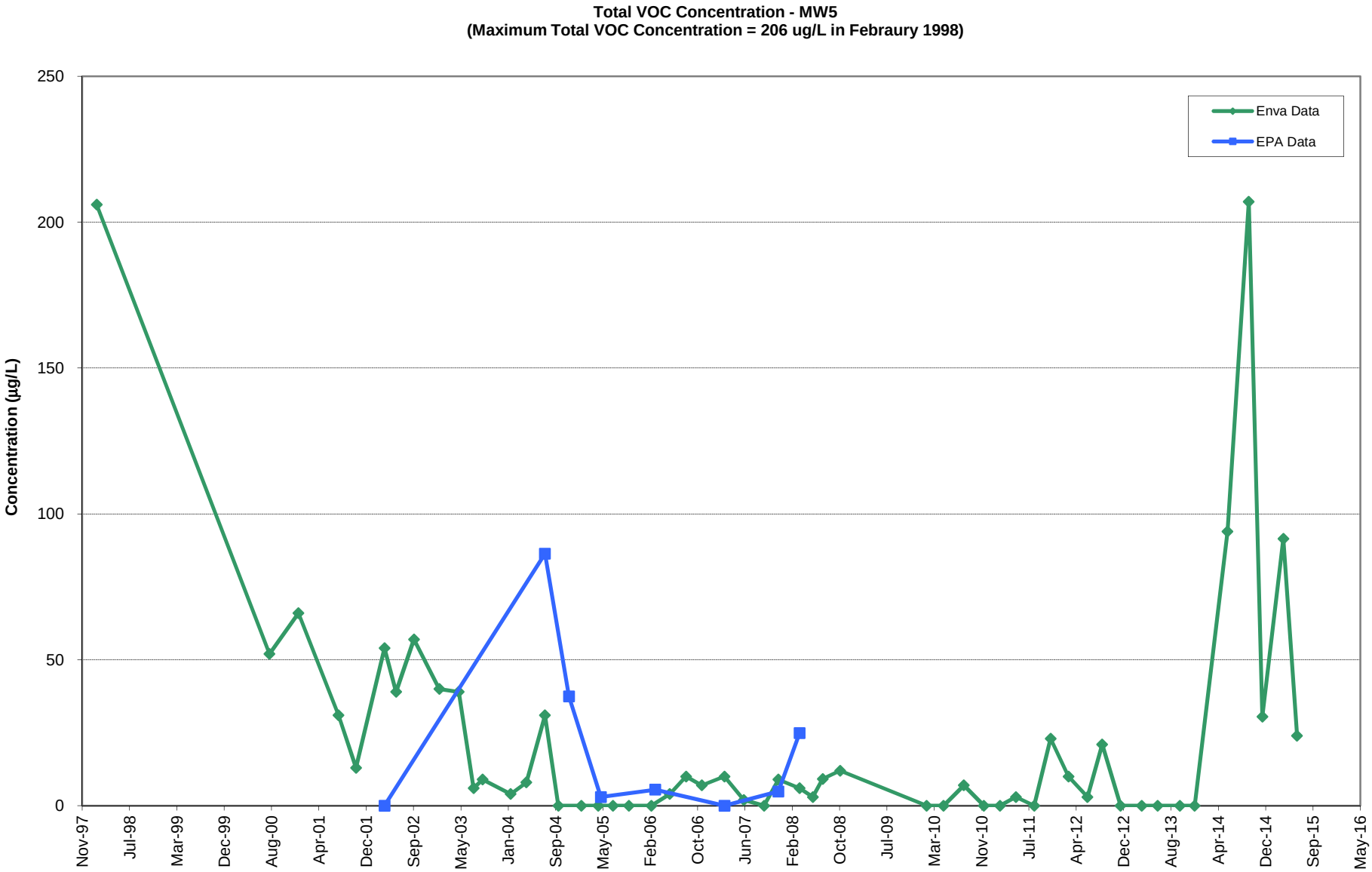
Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

++ Result outside calibration range, results should be considered as indicative only and are not accredited

Appendix C3: Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015



Appendix C3 - VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-98	Aug-00	Jan-01	Aug-01	Nov-01	Apr-02	Apr-02	Jun-02	Sep-02	Jan-03	Apr-03	Jul-03	Sep-03
Vinyl Chloride	1	0.375	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	16	-	-	-	-	n/a	-	2	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	1	-	-	n/a	3	2	2	3	-	-	-
Tetrachloroethene	1	7.5	10	n/a	-	-	-	-	n/a	-	1	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	2	-	1	-	n/a	6	4	5	6	-	-	-
1,1,1-Trichloroethane	1	nv	500	42	46	54	25	10	n/a	37	26	43	25	39	6	9
Chloromethane	1	nv	nv	-	-	-	-	-	n/a	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	**148**	-	-	-	-	n/a	-	-	-	-	-	-	-
Chloroform	1	nv	nv	-	4	5	5	3	n/a	8	4	7	6	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	6	-	-	n/a	-	-	-	-	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	n/a	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**206**	**52**	**66**	**31**	**13**	**0**	**54**	**39**	**57**	**40**	**39**	**6**	**9**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C3 - VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Jan-04	Apr-04	Jul-04	Jul-04	Oct-04	Nov-04	Feb-05	May-05	May-05	Jul-05	Oct-05
Vinyl Chloride	1	0.375	nv	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	<0.5	-	-	12	-	<0.5	-	-	-
Trichloroethene	1	7.5	10	-	-	3	-	-	2	-	<0.5	-	-	-
Tetrachloroethene	1	7.5	10	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
1,1-Dichloroethane	1	nv	nv	-	-	9	-	-	5	-	<0.5	-	-	-
1,1,1-Trichloroethane	1	nv	500	4	8	67	12	-	16	-	3	-	-	-
Chloromethane	1	nv	nv	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
Dichloromethane	1	nv	10	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-
Chloroform	1	nv	nv	-	-	7.4	2.0	-	2.8	-	<0.5	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	<0.5	17.0	-	<0.5	-	<0.5	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**4**	**8**	**86**	**31**	**0**	**38**	**0**	**3**	**0**	**0**	**0**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C3 - VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	Mar-06	May-06	Aug-06	Nov-06	Mar-07	Mar-07	Jun-07	Sep-07	Dec-07	Dec-07
Vinyl Chloride	1	0.375	nv	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
cis-1,2-Dichloroethene	1	nv	30	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Trichloroethene	1	7.5	10	-	<0.5	-	-	-	<0.1	-	-	-	0.6	1
Tetrachloroethene	1	7.5	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
1,1-Dichloroethane	1	nv	nv	-	1.8	-	-	3	<0.1	4	-	-	0.8	1
1,1,1-Trichloroethane	1	nv	500	-	2.5	4	5	4	<0.1	6	2	-	3.5	5
Chloromethane	1	nv	nv	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Dichloromethane	1	nv	10	-	<0.5	-	-	-	<0.1	-	-	-	<0.5	-
Chloroform	1	nv	nv	-	1.2	-	-	-	<0.1	-	-	-	<0.5	2
Trichlorofluoromethane	1	nv	nv	-	<0.5	-	5	-	<0.1	-	-	-	<0.5	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**0**	**6**	**4**	**10**	**7**	**0**	**10**	**2**	**0**	**5**	**9**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C3 - VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Apr-08	Apr-08	Jun-08	Aug-08	Nov-08	Feb-10	May-10	Aug-10	Nov-10	Feb-11	May-11	Aug-11	Nov-11
Vinyl Chloride	1	0.375	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	12.1	-	-	-	1	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	2.1	-	-	1.5	1.9	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	<0.5	-	-	1	1.5	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	7.2	4	3	3.7	4.6	-	-	7	-	-	3	-	3
Chloromethane	1	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	3.5	2	-	3	3	-	-	-	-	-	-	-	20
Trichlorofluoromethane	1	nv	nv	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	2	nv	1	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**25**	**6**	**3**	**9**	**12**	**0**	**0**	**7**	**0**	**0**	**3**	**0**	**23**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C3 - VOC Summary MW5, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-12	May-12	Aug-12	Nov-12	Mar-13	Jun-13	Sep-13	Dec-13	Jun-14	Sep-14	Dec-14	Mar-15	Jun-15
Vinyl Chloride	1	0.375	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	nv	500	-	3	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	nv	10	-	21	-	-	-	-	-	-	-	2	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.5	0.75	1	-	-	-	-	-	-	-	-	-	-	-	**1**	-
1,3,5-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	38	81	15	30	17
1,2,4-Trimethylbenzene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	37	-
4-Isopropyltoluene	3	nv	nv	-	-	-	-	-	-	-	-	-	-	-	4	-
Naphthalene	2	nv	1	-	-	-	-	-	-	-	-	**20**	**58**	**10**	**10**	**7**
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	0.5	nv	10	-	-	-	-	-	-	-	-	**36**	**68**	**4**	**9**	-
Total VOC Concentration				**10**	**3**	**21**	**0**	**0**	**0**	**0**	**0**	**94**	**207**	**31**	**92**	**24**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

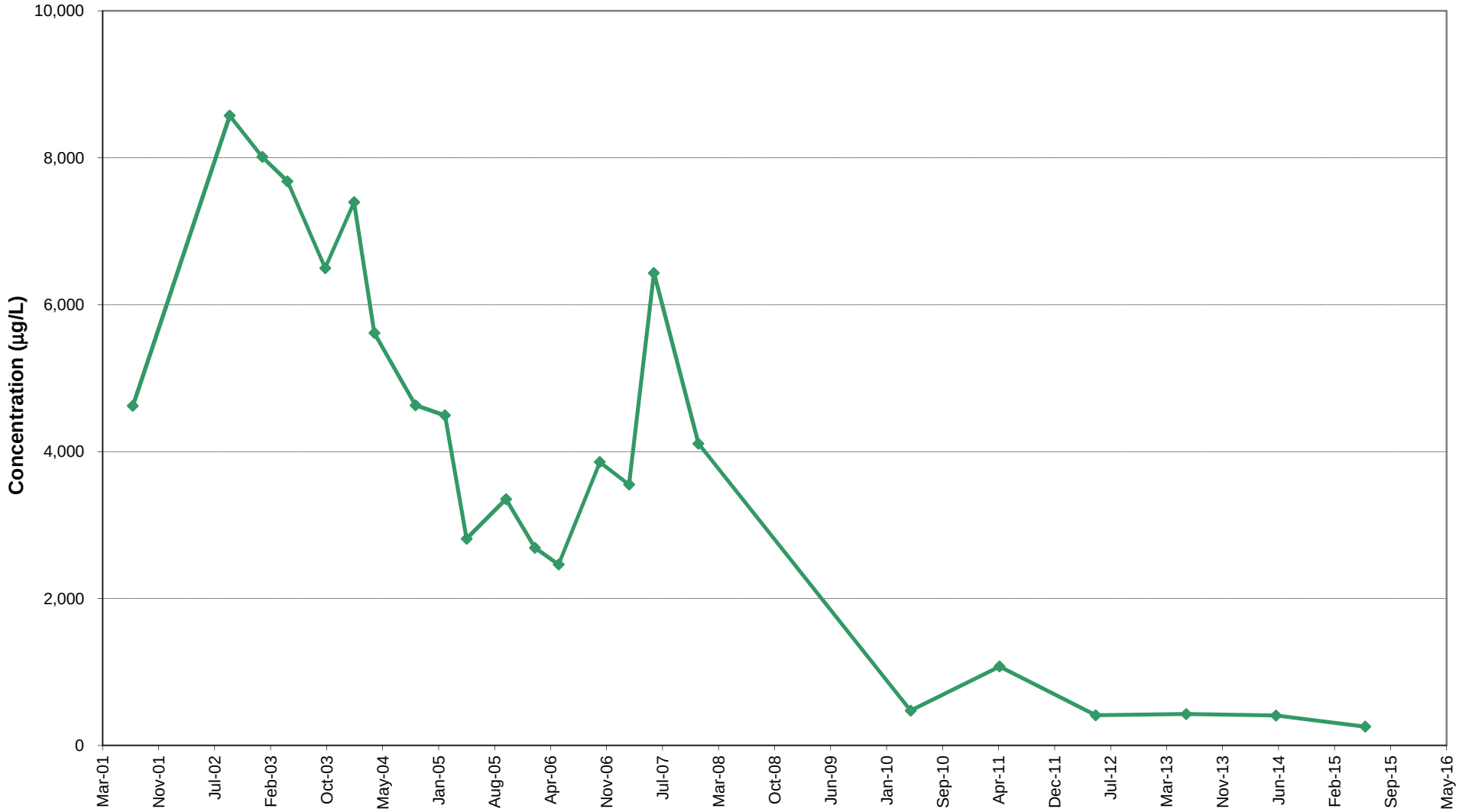
Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C4: Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Total VOC Concentration - MW8
(Maximum Total VOC Concentration = 8,574 ug/L in September 2002)



Appendix C4 - VOC Summary MW8, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Aug-01	Sep-02	Jan-03	Apr-03	Sep-03	Jan-04	Apr-04	Oct-04	Feb-05	May-05	Oct-05
Vinyl Chloride	1	0.375	nv	**83**	**258**	**259**	**322**	**225**	**258**	**268**	**290**	**375**	**175**	**217**
1,1-Dichloroethene	1	nv	30	5	-	-	-	-	8	7	6	7	-	4
cis-1,2-Dichloroethene	1	nv	30	**1491**	**4873**	**5013**	**4008**	**3715**	**4639**	**4377**	**3116**	**2940**	**1598**	**2129**
trans-1,2-Dichloroethene	1	nv	nv	13	-	-	17	15	17	14	11	14	-	-
Trichloroethene	1	7.5	10	**1024**	**1405**	**1218**	**1487**	**1128**	**1218**	**264**	**478**	**491**	**401**	**422**
Tetrachloroethene	1	7.5	10	**1953**	**1752**	**1288**	**1494**	**1198**	**1024**	**523**	**604**	**577**	**586**	**525**
Chloroethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	21	73	79	97	66	79	51	53	43	29	33
1,1,1-Trichloroethane	1	nv	500	26	22	23	36	27	28	21	17	15	7	8
Chloroform	1	nv	12	3	**187**	**126**	**212**	**120**	**118**	**77**	**54**	**29**	**18**	**15**
tert-butyl methyl ether	1	nv	30	-	-	-	-	-	-	5	-	-	-	-
Benzene	1	0.75	1	**3**	**4**	**5**	**5**	**4**	**4**	**3**	**3**	**3**	-	-
Toluene	1	nv	10	2	-	-	2	-	2	2	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	-	-	-	-	-	-	3	-	-	-	-
Total VOC Concentration				**4,624**	**8,574**	**8,011**	**7,680**	**6,498**	**7,395**	**5,615**	**4,632**	**4,494**	**2,814**	**3,353**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

2009 Data not available to URS

n/a - not analysed

Appendix C4 - VOC Summary MW8, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	May-06	Nov-06	Mar-07	Jun-07	Dec-07	May-10	May-11	May-12	Jun-13	Jun-14	Jun-15
Vinyl Chloride	1	0.375	nv	**164**	**104**	**252**	**171**	**247**	**267**	**16**	**72**	**26**	**26**	**22**	**20**
1,1-Dichloroethene	1	nv	30	-	6	-	5	10	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	**1592**	**1484**	**2353**	**2002**	**3942**	**1940**	**147**	**639**	**154**	**192**	**139**	**136**
trans-1,2-Dichloroethene	1	nv	nv	-	5	10	-	13	29	-	-	-	-	-	-
Trichloroethene	1	7.5	10	**364**	**302**	**582**	**643**	**1588**	**923**	**59**	**127**	**53**	**50**	**59**	**41**
Tetrachloroethene	1	7.5	10	**520**	**455**	**588**	**661**	**543**	**860**	**253**	**230**	**174**	**155**	**185**	**56**
Chloroethane	1	nv	nv	-	42	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	30	28	40	35	56	41	-	7	5	4	4	4
1,1,1-Trichloroethane	1	nv	500	-	6	11	17	14	25	-	-	-	-	-	-
Chloroform	1	nv	12	**20**	**23**	**20**	**17**	**16**	**24**	-	-	-	-	-	-
tert-butyl methyl ether	1	nv	30	-	6	-	-	-	-	-	-	-	-	-	-
Benzene	1	0.75	1	-	**2**	**2**	-	**3**	-	-	-	-	0.6	-	-
Toluene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**2,690**	**2,463**	**3,858**	**3,551**	**6,432**	**4,109**	**475**	**1,075**	**412**	**428**	**409**	**257**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

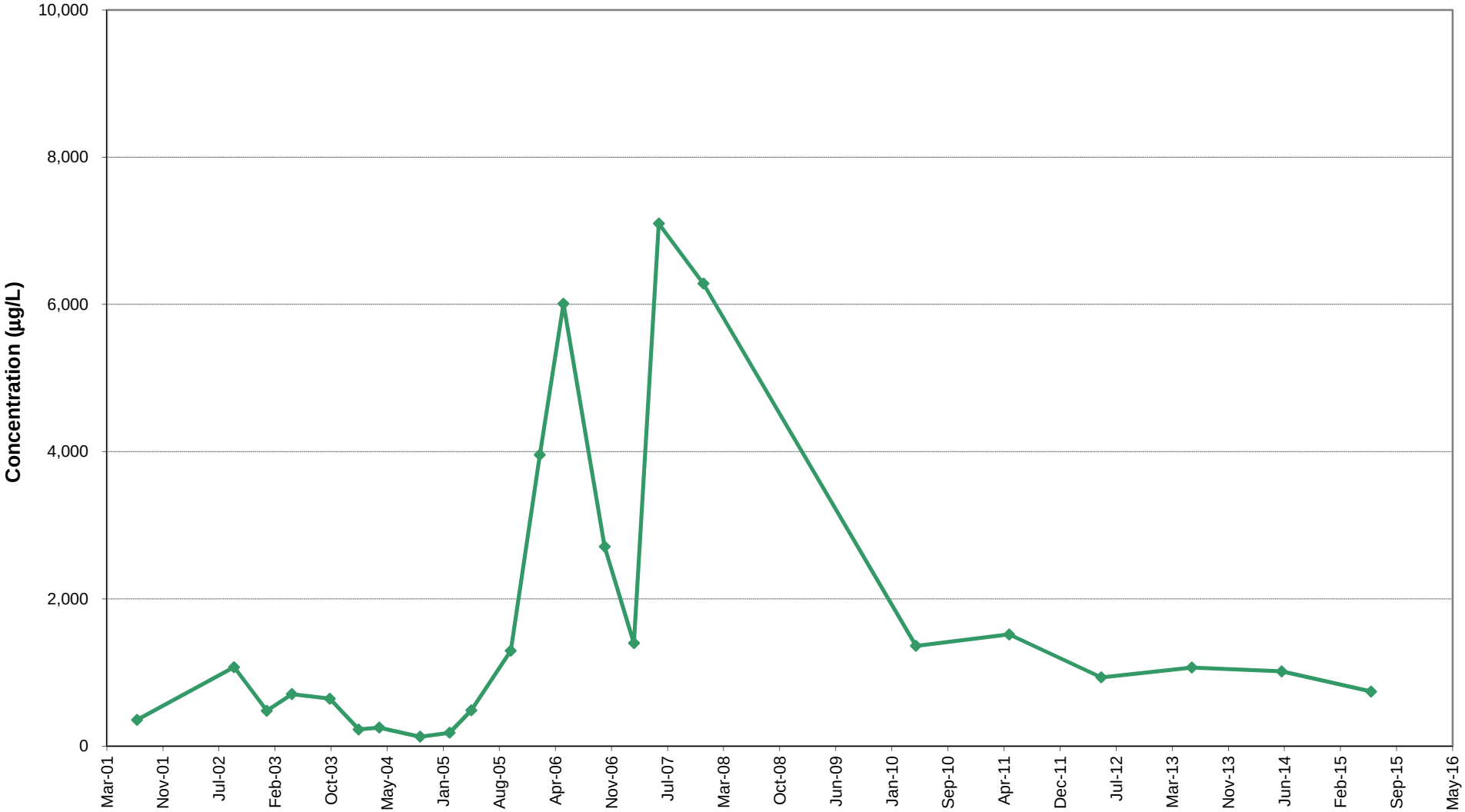
MRL - method reporting limit

- result below MRL

2009 Data not available to URS

n/a - not analysed

Total VOC Concentration - MW9
(Maximum Total VOC Concentration = 7,098 ug/L in June 2007)



Appendix C5 - VOC Summary MW9, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Aug-01	Sep-02	Jan-03	Apr-03	Sep-03	Jan-04	Apr-04	Oct-04	Feb-05	May-05	Oct-05
Vinyl Chloride	1	0.375	nv	**10**	**22**	**20**	**30**	**19**	**13**	**10**	**6**	**9**	**12**	**17**
1,1-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	**96**	**154**	**113**	**74**	**103**	**64**	**110**	**43**	**51**	**74**	**101**
trans-1,2-Dichloroethene	1	nv	nv	2	5	-	7	7	4	-	-	-	-	8
Trichloroethene	1	7.5	10	**54**	**41**	**12**	**12**	**14**	7	**9**	7	**9**	**8**	**8**
Tetrachloroethene	1	7.5	10	**12**	2	**22**	5	**10**	3	3	2	**8**	-	4
Chloroethane	1	nv	nv	-	185	21	-	-	7	-	-	-	14	20
1,1-Dichloroethane	1	nv	nv	51	326	95	167	124	56	64	32	58	118	200
1,1,1-Trichloroethane	1	nv	500	102	196	185	389	368	70	51	35	43	259	**936**
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	12	**26**	**70**	**13**	**22**	-	3	5	3	3	-	3
Trichlorofluoromethane	1	nv	nv	-	1	-	-	-	-	-	-	-	-	-
Carbon disulphide	1	nv	nv	-	64	-	-	-	-	-	-	-	-	-
Methyl Tertiary Butyl Ether	2	nv	30	-	-	-	-	-	-	-	-	-	-	-
Benzene	1	0.75	1	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	nv	10	3	2	-	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	2	-	-	-	-	-	-	-	-	-
o-Xylene	1	nv	10	-	3	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**356**	**1,073**	**481**	**706**	**645**	**227**	**252**	**128**	**181**	**485**	**1,297**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

++ Result outside calibration range, results should be considered as indicative only and are not accredited

Appendix C5 - VOC Summary MW9, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2015

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	May-06	Nov-06	Mar-07	Jun-07	Dec-07	May-10	May-11	May-12	Jun-13	Jun-14	Jun-15
Vinyl Chloride	1	0.375	nv	-	**24**	**50**	**18**	**25**	**58**	**88**	**128**	**58**	**150**	**113**	**128**
1,1-Dichloroethene	1	nv	30	-	**46**	-	-	-	**76**	**48**	**43**	20	17	**280**	9
cis-1,2-Dichloroethene	1	nv	30	**156**	**160**	**252**	**128**	**302**	**374**	**442**	**545**	**290**	**308**	**233**	**377**
trans-1,2-Dichloroethene	1	nv	nv	-	41	33	13	61	-	-	-	-	-	-	-
Trichloroethene	1	7.5	10	-	6	**13**	**8**	**10**	-	**31**	**32**	**17**	**13**	**18**	**28**
Tetrachloroethene	1	7.5	10	-	-	7	-	2	-	**13**	**13**	7	-	-	7
Chloroethane	1	nv	nv	-	48	46	14	53	97	93	-	69	81	60	41
1,1-Dichloroethane	1	nv	nv	592	536	404	243	804	789	623	740	372	364	280	136
1,1,1-Trichloroethane	1	nv	500	**3210**	**4401**	**1896**	**972**	**5746**	**4830**	-	**1717**$^{++}$	85	122	25	-
Dichloromethane	1	nv	10	-	-	-	-	**88**	**59**	-	-	-	-	-	8
Chloroform	1	nv	12	-	5	7	-	7	-	**12**	-	5	-	-	3
Trichlorofluoromethane	1	nv	nv	-	741	-	-	-	-	-	-	-	-	-	-
Carbon disulphide	1	nv	nv	-	-	-	-	-	-	na	na	na	-	-	-
Methyl Tertiary Butyl Ether	2	nv	30	-	-	-	-	-	-	12	15	10	11	6	4
Benzene	1	0.75	1	-	**2**	-	-	-	-	-	-	-	0.5	-	-
Toluene	1	nv	10	-	-	-	2	-	-	-	-	-	-	-	-
p/m-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**3,958**	**6,010**	**2,708**	**1,398**	**7,098**	**6,283**	**1,362**	**1,516**	**933**	**1,067**	**1,015**	**741**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

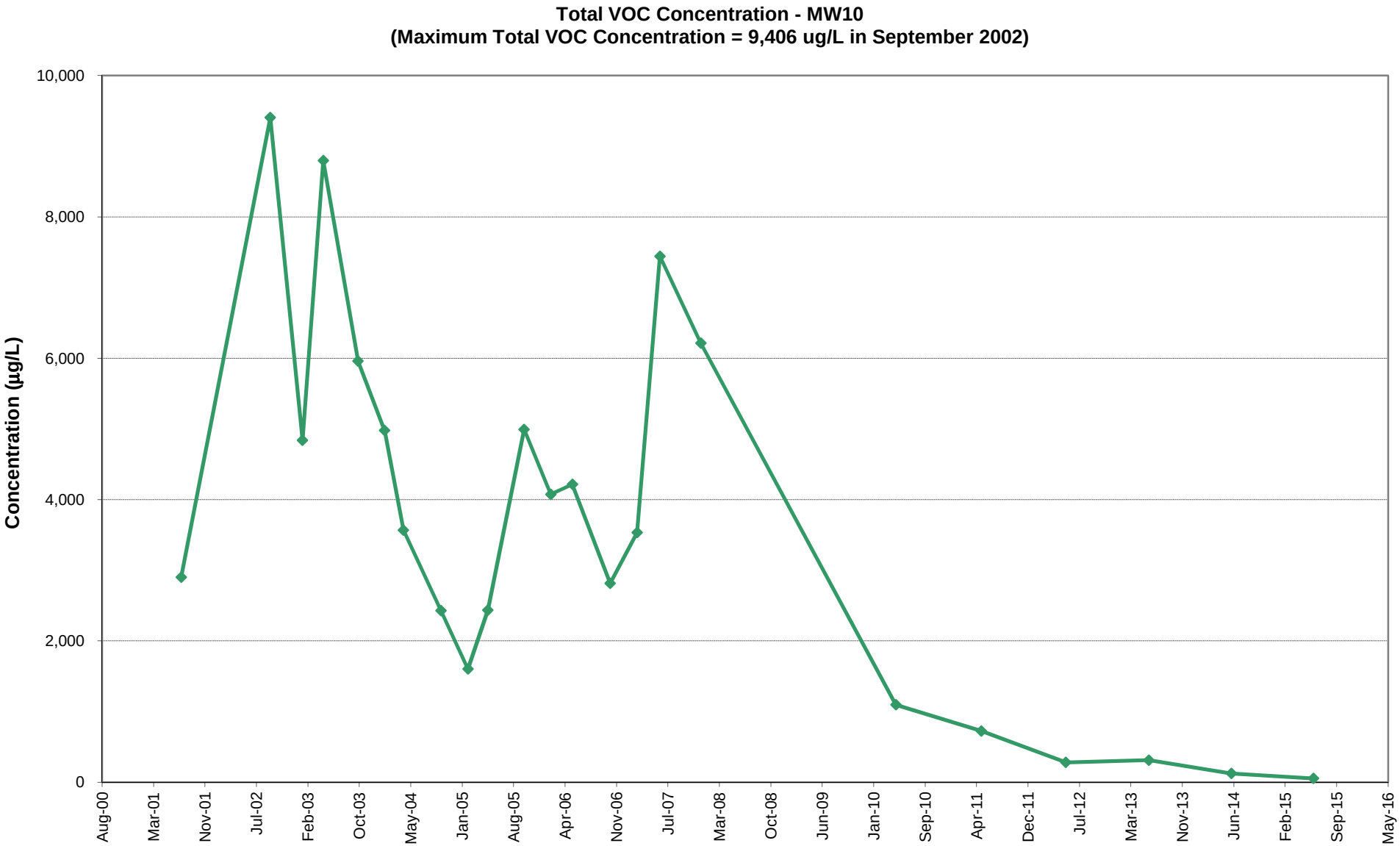
- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

$^{++}$ Result outside calibration range, results should be considered as indicative only and are not accredited


Total VOC Concentration - MW10
(Maximum Total VOC Concentration = 9,406 ug/L in September 2002)
Concentration (µg/L)
10,000
8,000
6,000
4,000
2,000
0
Aug-00
Mar-01
Nov-01
Jul-02
Feb-03
Oct-03
May-04
Jan-05
Aug-05
Apr-06
Nov-06
Jul-07
Mar-08
Oct-08
Jun-09
Jan-10
Sep-10
Apr-11
Dec-11
Jul-12
Mar-13
Nov-13
Jun-14
Feb-15
Sep-15
May-16

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Aug-01	Sep-02	Jan-03	Apr-03	Sep-03	Jan-04	Apr-04	Oct-04	Feb-05	May-05	Oct-05
Vinyl Chloride	1	0.375	nv	**18**	**64**	**57**	**57**	**55**	**51**	**27**	**31**	**36**	**31**	**57**
1,1-Dichloroethene	1	nv	30	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	**80**	**192**	**251**	**121**	**184**	**254**	**139**	**160**	**141**	**153**	**201**
trans-1,2-Dichloroethene	1	nv	nv	39	104	-	95	98	82	67	47	61	51	61
Trichloroethene	1	7.5	10	-	4	-	-	-	-	-	-	-	-	4
Tetrachloroethene	1	7.5	10	-	6	-	-	-	-	-	-	-	-	-
Chloroethane	1	nv	nv	-	8	-	-	-	3	-	-	2	-	-
1,1-Dichloroethane	1	nv	nv	123	341	283	384	326	269	181	178	158	-	278
1,1,1-Trichloroethane	1	nv	500	**2625**	**8680**	**4248**	**8141**	**5299**	**4319**	**3155**	**2015**	**1205**	**2163**	**4393**
Chloroform	1	nv	12	-	1	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	1	nv	nv	13	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	37	-
tert-butyl methyl ether	1	nv	30	4	6	-	-	-	-	-	-	-	-	-
Benzene	1	0.75	1	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	nv	10	-	-	-	-	-	-	-	-	-	2	-
Total VOC Concentration				**2,902**	**9,406**	**4,839**	**8,798**	**5,962**	**4,978**	**3,569**	**2,431**	**1,603**	**2,437**	**4,994**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	May-06	Nov-06	Mar-07	Jun-07	Dec-07	May-10	May-11	May-12	Jun-13	Jun-14	Jun-15
Vinyl Chloride	1	0.375	nv	**43**	**35**	**38**	**45**	**45**	**64**	**20**	**13**	**18**	**18**	**9**	**9**
1,1-Dichloroethene	1	nv	30	-	**61**	-	-	**92**	**81**	28	14	9	8	4	4
cis-1,2-Dichloroethene	1	nv	30	**130**	**108**	**229**	**202**	**278**	**164**	**76**	**47**	**43**	**57**	20	19
trans-1,2-Dichloroethene	1	nv	nv	58	69	53	49	92	-	-	-	*	-	-	-
Trichloroethene	1	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1	7.5	10	-	-	-	-	2	-	-	-	-	-	-	-
Chloroethane	1	nv	nv	-	13	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	nv	nv	259	234	276	233	414	354	83	67	38	38	20	23
1,1,1-Trichloroethane	1	nv	500	**3534**	**3666**	**2218**	**3004**	**6519**	**5550**	**890**	**585**	172	192	71	-
Chloroform	1	nv	12	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	1	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1	nv	nv	51	30	-	-	-	-	-	-	-	-	-	-
tert-butyl methyl ether	1	nv	30	-	-	-	-	-	-	-	-	2	-	-	-
Benzene	1	0.75	1	-	**1**	-	-	**2**	-	-	-	-	-	-	-
Toluene	1	nv	10	-	-	2	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**4,075**	**4,217**	**2,816**	**3,533**	**7,444**	**6,213**	**1,097**	**726**	**282**	**313**	**124**	**55**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

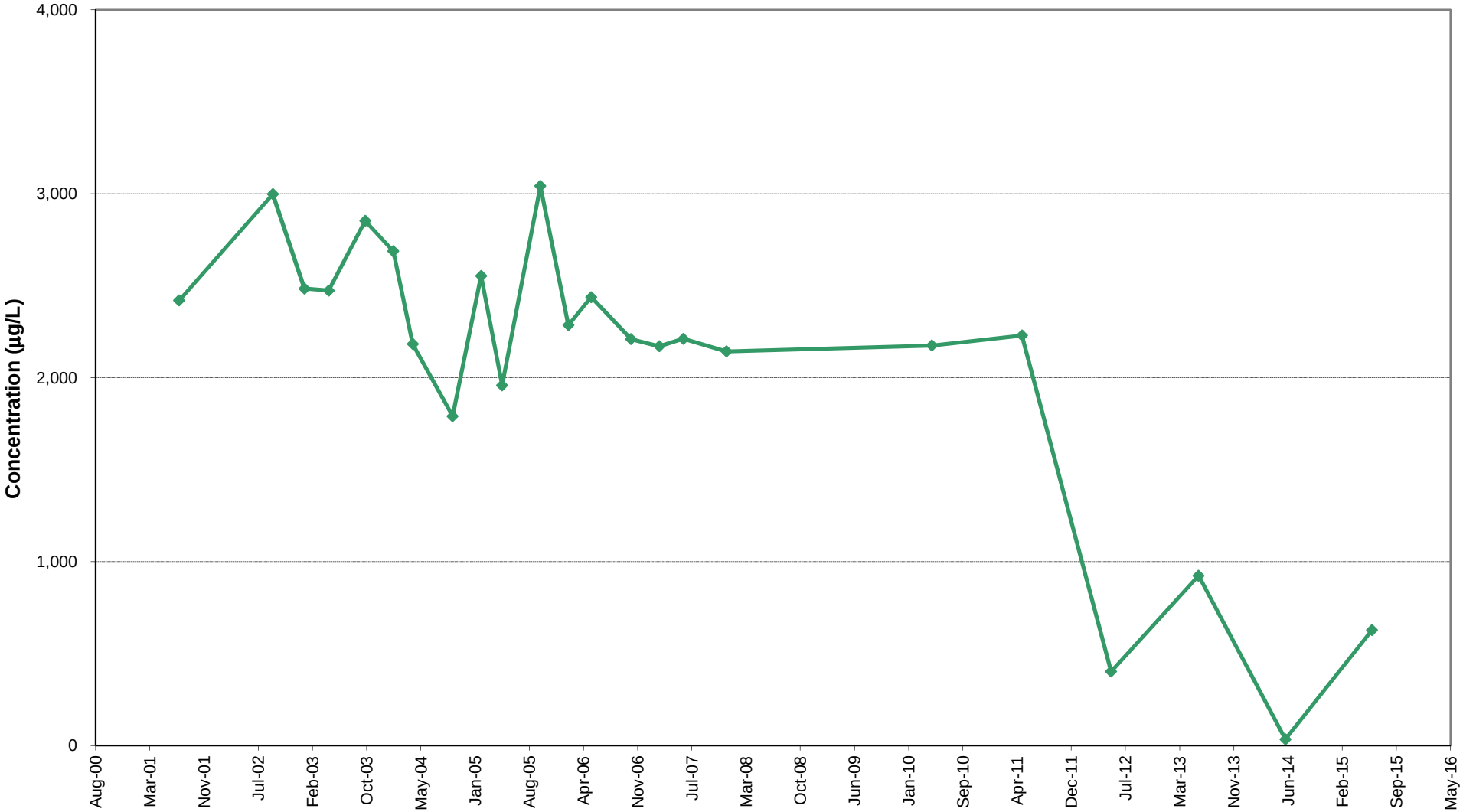
- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Total VOC Concentration - Production Well
(Maximum Total VOC Concentration = 3,042 ug/L in October 2005)



Appendix C7 - VOC Summary Production Well, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2014

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Aug-01	Sep-02	Jan-03	Apr-03	Sep-03	Jan-04	Apr-04	Oct-04	Feb-05	May-05	Oct-05
Vinyl Chloride	1	0.375	nv	**10**	**20**	**16**	**17**	**20**	**18**	**12**	**26**	**19**	**27**	**21**
1,1-Dichloroethene	1	nv	30	-	-	-	-	-	1	2	-	-	-	-
cis-1,2-Dichloroethene	1	nv	30	**470**	**600**	**585**	**352**	**584**	**559**	**551**	**508**	**509**	**517**	**910**
trans-1,2-Dichloroethene	1	nv	nv	31	38	-	32	37	38	31	24	42	23	29
Trichloroethene	1	7.5	10	**607**	**856**	**719**	**806**	**846**	**799**	**458**	**513**	**798**	**584**	**729**
Tetrachloroethene	1	7.5	10	**1206**	**1365**	**1065**	**1147**	**1258**	**1172**	**1059**	**650**	**1111**	**732**	**960**
1,1-Dichloroethane	1	nv	nv	55	71	65	74	67	62	42	46	54	53	83
1,1,1-Trichloroethane	1	nv	500	41	47	35	46	41	39	28	24	21	23	35
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	**275**
Chloroform	1	nv	12	-	1	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**2,420**	**2,998**	**2,485**	**2,474**	**2,853**	**2,688**	**2,183**	**1,791**	**2,554**	**1,959**	**3,042**

xx	Indicates data from EPA sampling
xx	Exceeds Groundwater Regulations 2010
xx	Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

Appendix C7 - VOC Summary Production Well, Enva Shannon, Groundwater Monitoring Data February 1998 to June 2014

Volatile Organic Compound (µg/L)	MRL (µg/L)	Groundwater Regs 2010	EPA Draft Interim Guideline Value (IGV)	Feb-06	May-06	Nov-06	Mar-07	Jun-07	Dec-07	May-10	May-11	May-12	Jun-13	Jun-14	Jun-15
Vinyl Chloride	1	0.375	nv	-	**17**	**25**	**16**	**16**	**21**	**15**	**14**	**20**	**14**	**12**	**5**
1,1-Dichloroethene	1	nv	30	-	**33**	-	-	-	24	**32**	22	7	15	-	8
cis-1,2-Dichloroethene	1	nv	30	**487**	**484**	**641**	**513**	**523**	**467**	**593**	**500**	**113**	**535**	9	**270**
trans-1,2-Dichloroethene	1	nv	nv	24	-	38	31	27	27	-	-	-	-	-	-
Trichloroethene	1	7.5	10	**628**	**646**	**543**	**571**	**630**	**630**	**431**	**477**	**80**	**97**	6	**165**
Tetrachloroethene	1	7.5	10	**1062**	**1167**	**871**	**955**	**965**	**900**	**1054**	**1186**	**173**	**217**	7	**158**
1,1-Dichloroethane	1	nv	nv	56	59	58	53	51	42	50	-	10	39	-	22
1,1,1-Trichloroethane	1	nv	500	29	32	34	32	-	32	-	31	-	7	-	-
Dichloromethane	1	nv	10	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	1	nv	12	-	-	-	-	-	-	-	-	-	-	-	-
Total VOC Concentration				**2,286**	**2,438**	**2,210**	**2,171**	**2,212**	**2,143**	**2,175**	**2,230**	**403**	**924**	**34**	**628**

xx Indicates data from EPA sampling

xx Exceeds Groundwater Regulations 2010

xx Exceeds IGV (Interim Guideline Value)

MRL - method reporting limit

- result below MRL

Feb-98, Aug-00, Jan-01 and Apr-01 data from KT Cullen reports.

2009 Data not available to URS

n/a - not analysed

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